EX-93580/93581 Panel PC
User Manual

Warning!

This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, it may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

Electric Shock Hazard – Do not operate the machine with its back cover removed. There are dangerous high voltages inside.

Disclaimer

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Table of Contents

Warning!……2
Disclaimer……2

Chapter 1 Getting Started

1.1 Features…….....……..……..……..…5
1.2 Specifications…….……..……..5
1.3 Brief Description of EX-93580/93581……..……7
1.4 Chassis Dimensions..……..…..9

Chapter 2 Installation

2.1 Unfastening of Back Cover……..10
2.2 Removal of Back Cover..…….....10
2.3 Opening of Back Cover..……10
2.4 Unfastening of Inside Cover...……....11
2.5 Removal of Inside Cover…….....11
2.6 Fastening of HDD……..……..……....11
2.7 Installation of HDD…….……...12
2.8 Connecting HDD Cable……..……12

Chapter 3 Mainboard

3.1 Specifications……..…..…….....13
3.2 Internal Periheral Connectors……....17
3.3 External (Rear Panel) Connectors…….....32
3.4 Onboard Jumper ……..……..…….....36

Chapter 4 AMI BIOS Setup

4.1 Introduction …… ……..……40
4.2 Main Menu…… ……..……..……..…..41
4.3 Advanced Menu ……..……..……43
4.4 PCI PnP Menu……..……67
4.5 Boot Menu …….....71
4.6 Security Menu. ……74
4.7 Chipset Menu……76
4.8 Power……82
4.9 Exit……89

Chapter 5 Software

5.1 Available Software Drivers ...…….91
5.2 Chipset Driver Installation ……91
5.3 RealTek Audio Driver Installation.……94
5.4 Intel Graphics Media Accelerator Driver ……98
5.5 LAN Driver Installation…….……101
5.6 SATA - ALi RAID Driver Installation.……103

Chapter 6 Touch Driver Installation

6.1 Windows 2000/XP Driver Installation for Controller Board.……113
6.2 Configuring PenMount Windows 2000/XP Driver……..117
6.3 Uninstall PenMount Windows 2000/XP Driver……124

Appendix

A Watchdog Timer……..……..……..……...…...126
B Digital I/O……..……..……..

Chapter 1

1.1 Features

- Ultra slim stainless steel sealed enclosure
- Fanless thermal solution
- Intel® Celeron® M ULV 800MHz CPU up to PentiumM 1.8GHz
- 15” high-brightness (380nits) TFT LCD display
- NEMA 4/IP65 compliant front panel
- VESA 75 Mounting support
- Space for one 2.5” HDD
- Optional resistive touch screen
- DC 11~28V wide range power input

1.2 Specifications

System

CPU:
Intel® Celeron® M ULV 800MHz CPU, Intel® Pentium M CPU Max. Up to 1.8GHz
Chipset:
Intel® 855GM+ICH4
System Memory:
1 x 200-pin DDR SODIMM
HDD Drive:
1 x 2.5” slim type
Watchdog:
1~255 secs watchdog timer w/reset and NMI
I/O Ports:
2 x COM, 2 x USB, 1 x 100 base-T LAN port, 1 x PS/2 keyboard and mouse port
VGA:
Built-in Intel 852GM
Compact Flash:
1 x compact flash connector
Touch Screen (optional) :
Resistive

Mechanical Specifications

Construction:

EX-93580: Sealed stainless steel chassis, NEMA 4X/IP65 rated front panel

EX-93581: Sealed painting metal chassis, NEMA 4X/IP65 rated front panel

Mounting:

VESA 75 mounting holes

Operating Temperature:

0~50 degrees C

Storage Temperature:

-10~75 degrees C

Vibration:

5~17Hz, 0.1” double amplitude peak to peak

Shock:

10G acceleration peak to peak (11ms)

EMC:

FCC, CE Class A

Dimensions:

383(W) x 52(D) x 316mm(H)

Weight:

6.5kgs

1.3 Brief Description of the EX-93580/93581

Out of the ordinary, the chassis of the EX-93580 is made of stainless steel with an ultra slim profile. It is built around the Intel® Celeron® M processor with a clock rate of 600MHz yet it is fanless. The model comes with a 15-inch high-brightness (380 nits) TFT LCD display, a NEMA 4/IP65 compliant front panel, space for one 2.5-inch HDD, an optional resistive touch screen, a DC 11~28V wide range power input. This industrial panel PC also features 2 COM ports (1 reserved for touch), 4 USB ports, one 100 base-T LAN port, and 1 PS/2 keyboard and mouse ports. It is ideal for use as a PC-based controller for Automotive, Logistic Process, Materials Handling, and Kiosk applications.

Figure 1.1: Front View of EX-93580/93581

Figure 1.2: Rear View of EX-93580/93581

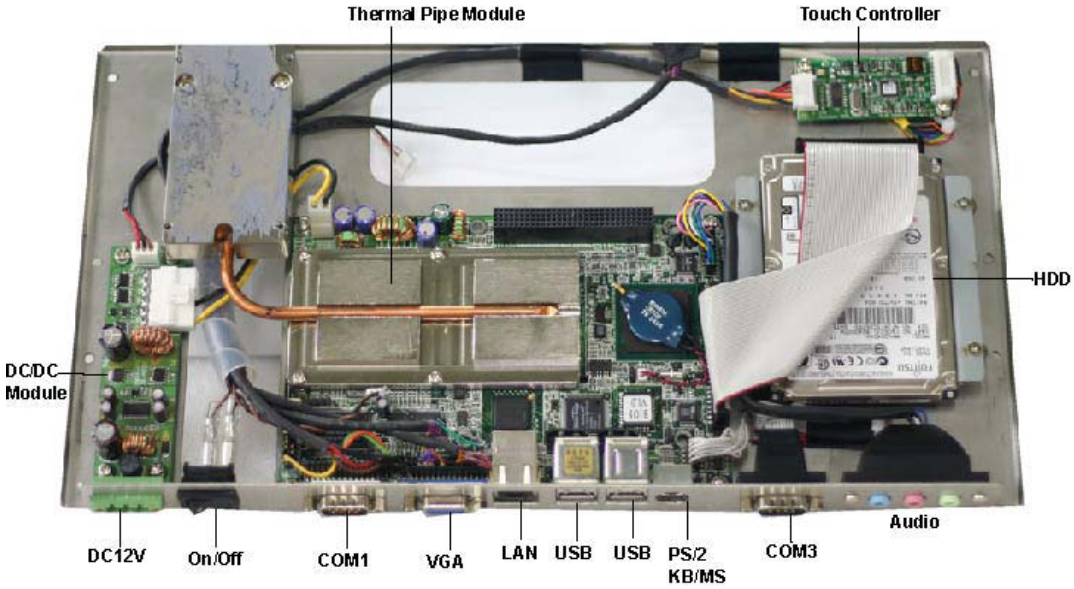


Figure 1.3: System Layout

1.4 Chassis Dimensions

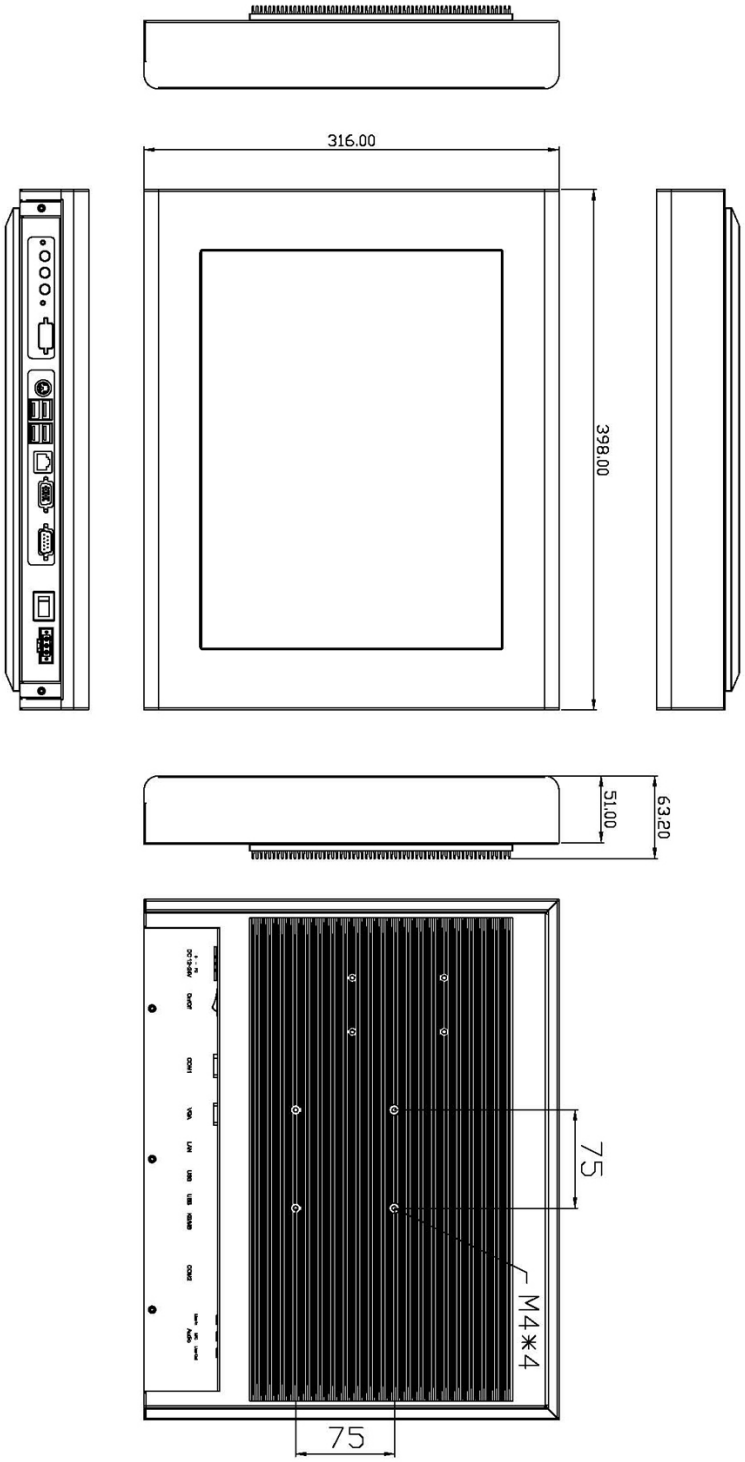


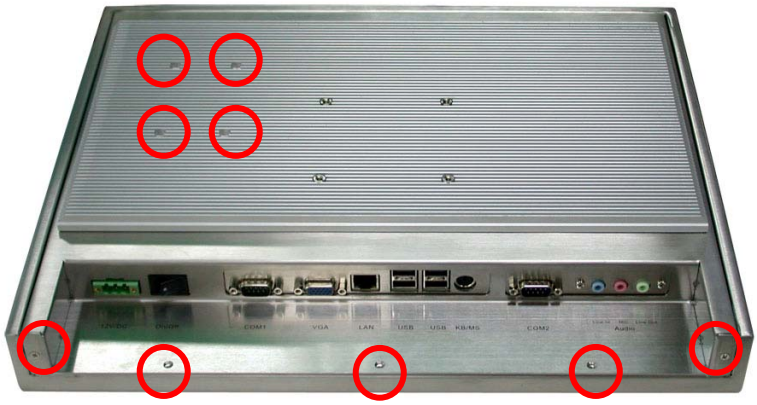
Figure 1.4: Dimensions of the EX-93580/93581

Chapter 2

2 Installation

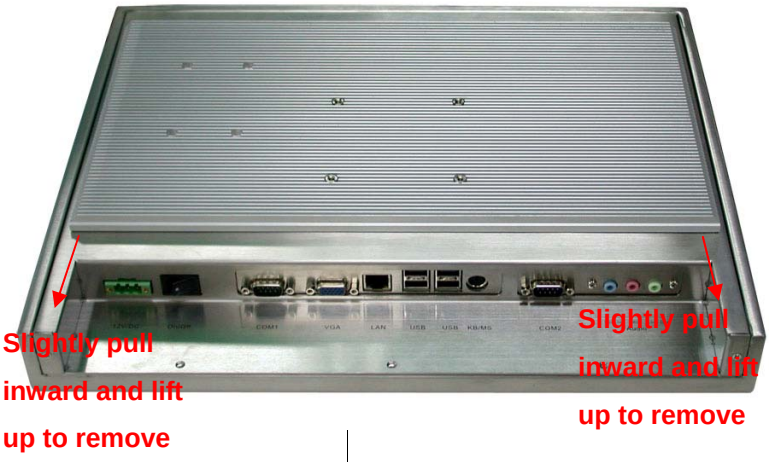
2.1 Unfastening of Back Cover

First remove the back cover by loosening the 9 screws as circled in the picture.



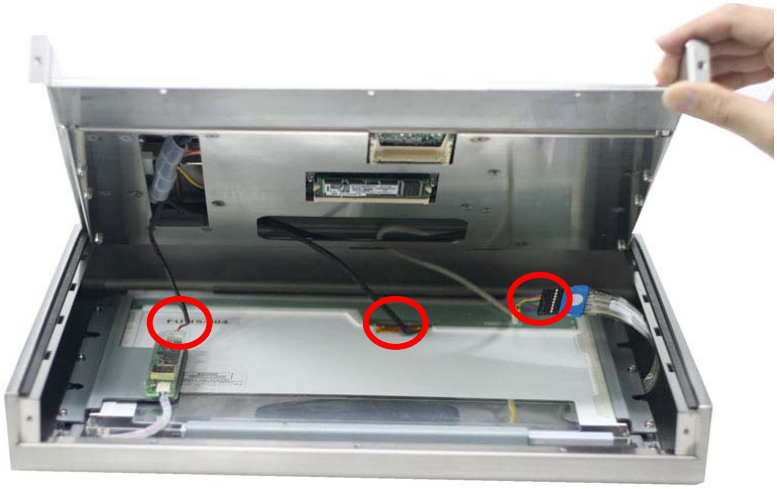
2.2 Removal of Back Cover

To get the back cover opened up, slightly pull it inward as shown in the picture with your hands and lift it up slowly.



2.3 Opening of Back Cover

Please open, with care, the back cover at 45 degrees, making sure the cables inside the enclosure are intact. If the back cover is swiftly opened at 90 degrees, the cables might be ripped apart. To totally remove the back cover from the enclosure, disconnect the three cables as circled.



2.4 Unfastening of Inside Cover

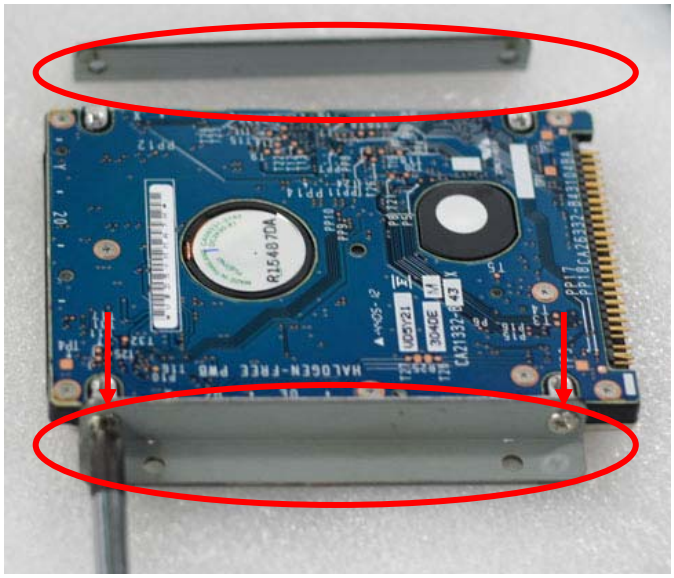
Unfasten the 6 screws as circled in the picture to open the inside cover where the system board is.

2.5 Removal of Inside Cover

To totally remove the inside cover, place one hand at one corner of the cover as shown by the circle in the picture, and place the other at the other corner, and give it a push in the direction of the arrow as shown in the picture.

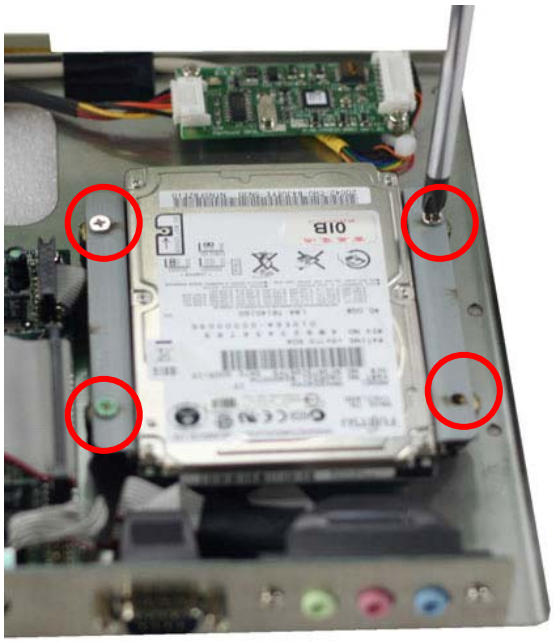
2.6 Fastening of HDD

Circled in the picture are two HDD brackets used to mount the HDD on the system board. Before doing the mounting, place the brackets by the sides of the HDD and tighten them with the screws as shown by the arrows in the picture.



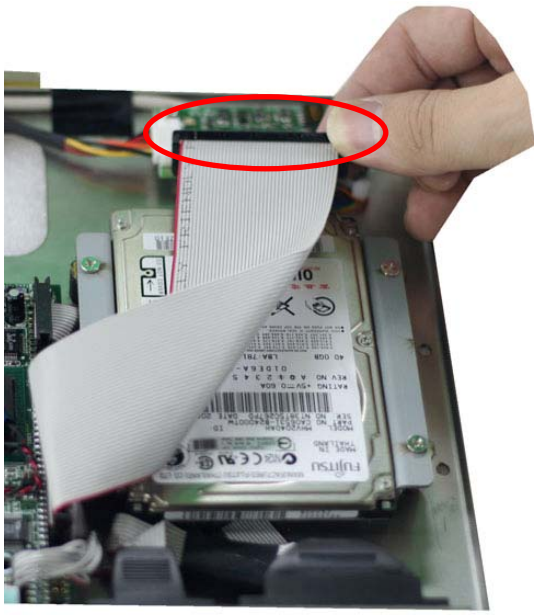
2.7 Installation of HDD

Now mount the HDD with each bracket tightened by its side on the space found in the system board. To put the HDD in place, fasten the four screws as shown in the picture.



2.8 Connecting HDD Cable

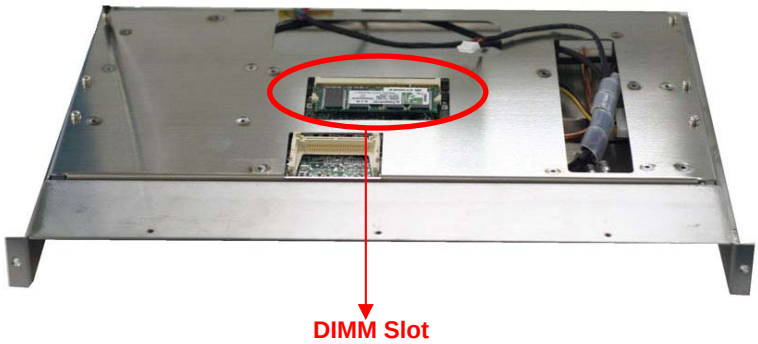
Lastly, connect one end of the HDD cable to the IDE socket while the other end is connected to the HDD interface, making sure the red stripe found on the cable is correctly connected to Pin 1.



***** Please note that to close the back cover of the Panel PC, please follow Steps 2.5, 2.4, 2.3, 2.2 and 2.1 as shown above.**

Location of DIMM Slot

The location of the DIMM slot as circled in the picture is found on the reverse side of the board.



Chapter 3

Mainboard

Thank you for choosing the socket 479 (mobile) Pentium M single board computer. The mainboard is equipped with a high-performance processor and multi-mode I/O designed for the system manufacturers and integrators.

In addition, the VGA controller of the board's built-in AGP4X VGA (Intel 852GM) has 3D graphics capability, which provides up to 2048 x 1536 x 32-color resolution. The onboard VGA shares 32MB (max.) system DDR-SDRAM.

An advanced high-performance super AT I/O chip -- Winbond W83627HF and Fintek F81216D are used in the mainboard. On-chip UARTs are compatible with the NS16C550. The parallel port and IDE interface are compatible with IBM PC/AT architecture.

It has the 82551/541 LAN controller. They are fully integrated 10 base-T, 100 base-TX LAN, or 1000 base-TX solutions with high-performance networking functions and low-power consumption.

The board uses Intel® 852GM chipset, which are 100% software compatible and are of PCI 2.2 standard.

3.1 Specifications

CPU:
Socket 479 for Intel® Pentium® M CPU with 333/400MHz FSB, Max. up to 1.7GHz
Onboard ULV Intel® Celeron® M 800MHz with 512KB L2 cache

Chipset:
Intel® 852GM + ICH4

System Memory:
One 200-pin DDR SO-DIMM supporting DDR266 SDRAM up to 1GB

Display:
Display controller
Intel GMCH integrated graphics controller
Integrated AGP 4X 2D/3D engine
One VGA port for CRT monitor 1600x1200@8bpp, 1280x1024@16bpp

48-bit LVDS port
Dual independent displays
Shared system memory of up to 32MB (DVMT)

Ethernet:
Intel 82541ER for 10/100/1000Mbps Ethernet or
Intel 82551ER for 10/100Mbps Ethernet

I/O Ports:
1 x IDE port
1 x parallel port
1 x PS/2 keyboard/mouse support
1 x RS-232 serial port
1 x RS-232/422/485 port
2 x SATA port
6 x USB 2.0 port (4 by connector, 2 by pin header)

Audio:
AC' 97 CODEC

Digital I/O:
4 input and 4 output (by pin header)

WDT:
Software programmable support 1~255 sec system reset

Hardware Monitoring:
CPU voltage/temperature/fan speed monitor

Power Control Function:
Meeting ACPI 1.1 specifications
Single voltage +12V only

Operating Temperature:
0˚~60℃ or 32˚~140℉

Relative Humidity:
5~95%, non-condensing

3.1 Peripheral Interface Connectors

The locations of the peripheral interface connectors are shown in **Section 3.1.1**. A complete list of all the peripheral interface connectors can be seen in **Section 3.1.2**.

3.1.1 MOTHERBOARD Board Layout

Figure 3-1 and Figure 3-2 shows the onboard peripheral connectors, rear panel peripheral connectors and onboard jumpers.

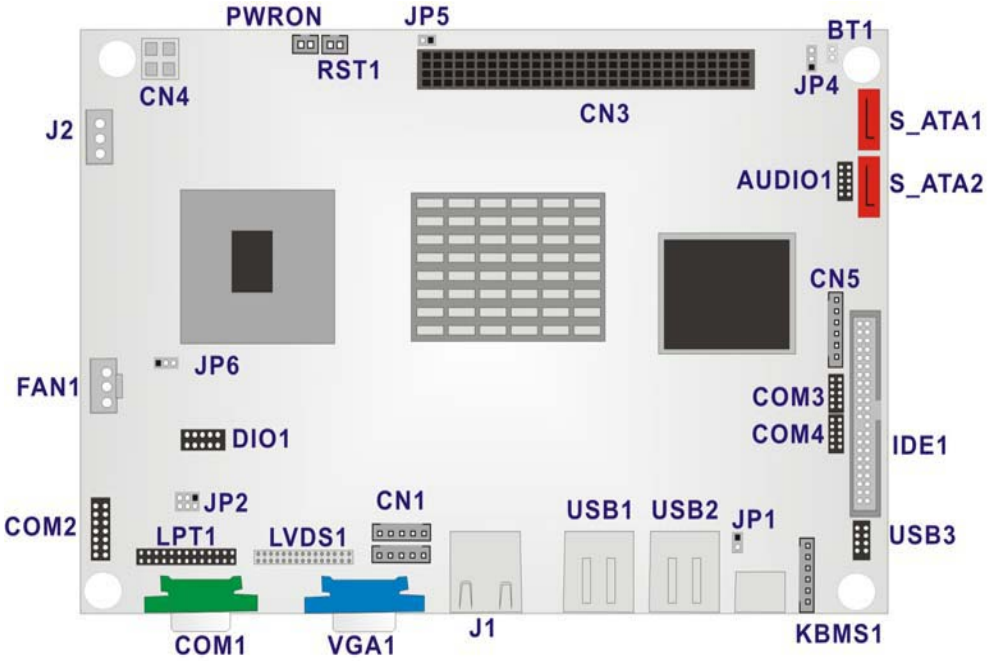


Figure 3.1: Board Layout

3.1.2 Peripheral Interface Connectors 3.1.3 Rear Panel Connectors

Table 3-1 shows a list of the peripheral interface connectors on the MOTHERBOARD board. Detailed descriptions of these connectors can be found in **section 3.2** on **page 41**.

Connector	Type	Label
4-bit GPIO connector	10-pin header	DIO1
ATX power button connector	2-pin header	PWRON
ATX power connector	3-pin header	J2
Audio connector	10-pin header	AUDIO1
Battery connector	2-pin header	BT1

Board 12V power connector	**4-pin header**	**CN4**
CFII connector (Secondary IDE connector)	**50-pin**	**CN6**
DDR SODIMM slot	**200-pin slot**	**J3**
Inverter connector	**5-pin header**	**CN1**

IR interface connector	**5-pin header**	**IR1**
Fan connector	**3-pin header**	**FAN1**
IDE interface connector (Primary)	**44-pin header**	**IDE1**
Keyboard/Mouse connector	**6-pin header**	**KBMS1**
LED connector	**6-pin header**	**CN5**
LVDS connector	**30-pin header**	**LVDS1**
Parallel port connector	**26-pin header**	**LPT1**
PC/104+ connector	**120-pin PCI slot**	**CN3**
Reset connector	**2-pin header**	**RST1**
Serial ATA connector	**7-pin header**	**S_ATA1**
Serial ATA connector	**7-pin header**	**S_ATA2**
Serial port2 connector	**14-pin header**	**COM2**
Serial port3 connector	**10-pin header**	**COM3**
Serial port4 connector	**10-pin header**	**COM4**
USB 2.0 internal USB connector	**8-pin header**	**USB3**

Table 3-1: Peripheral Interface Connectors

Table 3-2 lists the rear panel connectors on the MOTHERBOARD board. Detailed descriptions of these connectors can be found in **Section 3.3**on **page 66**.

Connector	Type	Label
Ethernet connector	RJ-45 connector	J1
Keyboard/Mouse connector	PS/2 connector	KB/PS1
Serial port1 connector	9-pin serial port connectors	COM1
Two USB 2.0 ports	USB port connectors	USB1
Two USB 2.0 ports	USB port connectors	USB2
VGA Connector	15-pin VGA connector	VGA1

Table 3-2: Peripheral Interface Connectors

3.1.3 Onboard Jumpers

Table 3-3 lists the onboard jumpers. Detailed descriptions of these jumpers can be found in **Section 3.4** on **page 70**.

Connector	Type	Label
CF card setup	2-pin header	JP1
Clear CMOS	3-pin header	JP4
COM2 RS232/RS422/RS485 selector	6-pin header	JP2
LCD voltage selector	3-pin header	JP6
PC104+ SERIRQ net to CN3 pin B1 selector	3-pin header	JP5

Table 3-3: Onboard Jumpers

3.2 Internal Peripheral Connectors

Internal peripheral connectors are found on the board and are only accessible when the board is outside of the chassis. This section has complete descriptions of all the internal, peripheral connectors on the MOTHERBOARD board.

3.2.1-bit GPIO Connector

CN Label: **DIO1**

CN Type: **2x5 pin headers**

CN Location: **See Figure 3-3**

CN Pinouts: **See Table 3-4**

The General Purpose Input/Output (GPIO) connector connects external devices. The GPIO connector provides a set of configurable IO ports for either input or output.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	VCC
3	OUT0	4	OUT1
5	OUT2	6	OUT3
7	IN0	8	IN1
9	IN2	10	IN3

Table 3-4: 4-bit GPIO Connector Pinouts

3.2.2 ATX Power Button Connector

CN Label: **PWRON**

CN Type: **1x2 pin headers**

CN Location: **See Figure 3-4**

CN Pinouts: **See Table 3-5**

The ATX power button connector supports ATX power switch and enables power on/off from the chassis.

PIN NO.	DESCRIPTION
1	Button 1
2	Button 2

Table 3-5: Power Button Connector Pinouts

3.2.3 ATX Power Connector

CN Label: **J2**

CN Type: **1x3 pin header**

CN Location: **See Figure 3-5**

CN Pinouts: **See Table 3-6**

This connector supports the ATX power supply.

PIN NO.	DESCRIPTION
1	5VSBY
2	GND
3	PSON

Table 3-6: Power Connector Pinouts

3.2.4 Audio Connector

CN Label: **AUDIO1**

CN Type: **2x5 pin headers**

CN Location: **See Figure 3-6**

CN Pinouts: **See Table 3-7**

The MOTHERBOARD has a built-in AC ’97 AUDIO CODEC connector directly connected to the MIC-IN, LINE-IN and LINE-OUT.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	LINE_OUT-R	2	LINE_IN-R
3	GND	4	GND
5	LINE_OUT-L	6	LINE_IN-L
7	GND	8	GND
9	MIC-IN	10	NC

Table 3-7: Audio Connector Pinouts

3.2.5 Battery Connector CN Label: BT1

CN Type: 1x2 pin header

CN Location: See Figure 3-7

The battery connector is connected to a preinstalled VARTA CR2032 3V battery

3.2.6 12V Power Connector

CN Label: **CN4**

CN Type: **1x4 pin header**

CN Location: **See Figure 3-8**

CN Pinouts: **See Table 3-8**

Connects a power source from a power supply unit (PSU) to the MOTHERBOARD.

PIN NO.	DESCRIPTION
1	GND
2	GND
3	VCC12
4	VCC12

Table 3-8: 12V Power Connector Pinouts

3.2.6 Compact Flash Type 2 Socket

CN Label: CN6

CN Type: 50-pin

CN Location: See Figure 3-9

CN Pinouts: See Table 3-9

A CFII (compact flash type II connector) is located on the solder side of the MOTHERBOARD. The CFII connector is for applications without external storage. The Compact Flash socket provides an alternative to hard disk drives in applications where hard disk drives may consume too much space and storage capacity is not a requirement. The CF card behaves like a secondary IDE master

disk drive.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	26	VCC-IN CHECK1
2	DATA 3	27	DATA 11
3	DATA 4	28	DATA 12
4	DATA 5	29	DATA 13
5	DATA 6	30	DATA 14
6	DATA 7	31	DATA 15
7	HDC_CS0#	32	HDC_CS1
8	N/C	33	N/C
9	GROUND	34	IOR#
10	N/C	35	IOW#
11	N/C	36	N/C
12	N/C	37	INTERRUPT
13	VCC_COM	38	VCC_COM
14	N/C	39	CSEL
15	N/C	40	N/C
16	N/C	41	HDD_RESET
17	N/C	42	IORDY
18	SA2	43	N/C
19	SA1	44	VCC_COM
20	SA0	45	HDD_ACTIVE#
21	DATA 0	46	N/C
22	DATA 1	47	DATA 8
23	DATA 2	48	DATA 9
24	N/C	49	DATA 10
25	VCC-IN CHECK2	50	GROUND

3.2.7 DDR SODIMM Socket

CN Label: **J3**

CN Type: **200 Pin DDR-SDRAM SODIMM Socket**

CN Location: **See Figure 3-10**

A 200 pin DDR-SDRAM SODIMM socket is located on the rear side of the MOTHERBOARD board.

The SODIMM socket can support 266MHz DDR SODIMM SDRAM of up to 1GB.

3.2.8 Fan Connector

CN Label: **FAN1**

CN Type: **1x3 pin header**

CN Location: **See Figure 3-11**

CN Pinouts: **See Table 3-10**

The cooling fan connector provides a 12V, 500mA current to a system cooling fan. The connector has a "rotation" pin to get rotation signals from fans and notify the system so the

system BIOS can recognize the fan speed. Please note that only specified fans can issue the rotation signals.

PIN NO.	DESCRIPTION
1	Fan Speed Detect
2	+12V
3	GND

Table 3-10: Fan Connector Pinouts

3.2.9 IDE Interface Connector

CN Label: **IDE1**

CN Type: **2x22 pin header**

CN Location: **See Figure 3-12**

CN Pinouts: **See Table 3-11**

One IDE connector provides connectivity to two IDE devices.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RESET#	2	GROUND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GROUND	20	N/C
21	IDE DRQ	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	IDE CHRDY	28	GROUND
29	IDE DACK	30	GROUND–DEFAULT
31	INTERRUPT	32	N/C
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND
41	VCC	42	VCC
43	GROUND	44	N/C

Table 3-11: IDE Connector Pinouts

3.2.10 Inverter Connector

CN Label: **CN1**

CN Type: **1x5 pin headers**

CN Location: **See Figure 3-13**

CN Pinouts: **See Table 3-12**

The inverter connector connects to the LCD backlight inverter.

PIN NO.	DESCRIPTION
1	BKLTCTL
2	GND
3	+12V
4	GND
5	BKLEN

Table 3-12: Inverter Connector Pinouts

3.2.11 IR Interface Connector

CN Label: **IR1**

CN Type: **1x5 pin headers**

CN Location: **See Figure 3-14**

CN Pinouts: **See Table 3-13**

The integrated infrared (IrDA) connector supports both Serial Infrared (SIR) and Amplitude Shift Key Infrared (ASKIR) interfaces.

PIN NO.	DESCRIPTION
1	VCC
2	N/C
3	RXD
4	GND
5	TXD

Table 3-13: IR Interface Connector Pinouts

3.2.12 Keyboard/Mouse Connector

CN Label: **KBMS1**

CN Type: **1x6 pin header**

CN Location: **See Figure 3-15**

CN Pinouts: **See Table 3-14**

The Keyboard/PS2 mouse cable shipped with the MOTHERBOARD board is connected to the keyoard/mouse connector.

PIN NO.	DESCRIPTION
1	VCC5
2	MOUSE DATA
3	MOUSE CLOCK
4	KEYBOARD DATA
5	KEYBOARD CLOCK
6	GND

Table 3-14: Keyboard/Mouse Connector Pinouts

3.2.13 LED Connector

CN Label: **CN5**

CN Type: **1x6 pin header**

CN Location: **See Figure 3-16**

CN Pinouts: **See Table 3-15**

This connector connects to the LED lights indicating the hard drive activity and the power status.

PIN NO.	DESCRIPTION
1	+5V
2	GND
3	VCC5 LED+
4	GND
5	HDD LED+
6	HDD LED-

Table 3-15: LED Connector Pinouts

3.2.14 LVDS Connector

CN Label: **LVDS1**

CN Type: **DF 13**

CN Location: **See Figure 3-17**

CN Pinouts: **See Table 3-16**

LVDS (Low Voltage Differential Signaling) is a low noise, low power, and low amplitude method for high-speed data transmission over a copper wire. The LVDS connector is typically connected to an LCD screen.

PIN NO.	Description	PIN NO.	Description
2	GND	1	NC
4	AY0	3	AY0+
6	AY1	5	AY1+
8	AY2	7	AY2+
10	AYCLK-	9	AYCLK+
12	AY3	11	AY3+
14	GND	13	GND
16	BY0-	15	BY0+
18	BY1-	17	BY1+
20	BY2-	19	BY2+
22	BYCLK-	21	BYCLK+
24	BY3-	23	BY3+
26	GND	25	GND
28	LCDVCC	27	LCDVCC
30	LCDVCC	29	LCDVCC

Table 3-16: LVDS Connector Pinouts

3.2.15 Parallel Port Connector

CN Label: **LPT1**

CN Type: **2x13 pin header**

CN Location: **See Figure 3-18**

CN Pinouts: **See Table 3-17**

The parallel port connector is usually connected to a printer. A 26-pin flat-cable connector is used to connect the parallel port with a printer or other parallel communication devices.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	STROBE#	14	AUTO FORM FEED #
2	DATA0	15	ERROR#
3	DATA1	16	INITIALIZE#
4	DATA2	17	PRINTER SELECT LN#
5	DATA3	18	GND
6	DATA4	19	GND
7	DATA5	20	GND
8	DATA6	21	GND
9	DATA7	22	GND
10	ACKNOWLEDGE #	23	GND
11	BUSY	24	N/C
12	PAPER EMPTY	25	GND
13	PRINTER SELECT		

Table 3-17: Parallel Port Connector Pinouts

3.2.16 PC/104+ Connector

CN Label: **CN3**

CN Type: **4x30 pin PCI slot**

CN Location: **See Figure 3-19**

CN Pinouts: **See Table 3-18**

This connector supports the PC/104+ module.

PIN	Description	PIN	Description	PIN	Description	PIN	Description
A1	GROUND	B1	NC/SERIRQ	C1	+5V	D1	AD0
A2	VIO	B2	AD2	C2	AD1	D2	+5V
A3	AD5	B3	GND	C3	AD4	D3	AD3
A4	CBE0-	B4	AD7	C4	GND	D4	AD6
A5	GND	B5	AD9	C5	AD8	D5	GND
A6	AD11	B6	VIO	C6	AD10	D6	N66EV
A7	AD14	B7	AD13	C7	GND	D7	AD12
A8	+3.3V	B8	CBE1-	C8	AD15	D8	+3.3V
A9	SERR	B9	GND	C9	SBO	D9	PAR
A10	GND	B10	PERR	C10	+3.3V	D10	SDONE
A11	STOP	B11	+3.3V	C11	LOCK-	D11	GND
A12	+3.3V	B12	TRDY-	C12	GND	D12	DEVSEL-
A13	FRAME-	B13	GND	C13	IRDY-	D13	+3.3V
A14	GND	B14	AD16	C14	+3.3V	D14	CBE2-
A15	AD18	B15	+3.3V	C15	AD17	D15	GND
A16	AD21	B16	AD20	C16	GND	D16	AD19
A17	+3.3V	B17	AD23	C17	AD22	D17	+3.3V
A18	IDSEL0	B18	GND	C18	IDSEL1	D18	IDSEL2
A19	AD24	B19	CBE3	C19	VIO	D19	IDSEL3
A20	GND	B20	AD26	C20	AD25	D20	GND
A21	AD29	B21	+5V	C21	AD28	D21	AD27
A22	+5V	B22	AD30	C22	GND	D22	AD31
A23	REQ0	B23	GND	C23	REQ1-	D23	VIO
A24	GND	B24	REQ2-	C24	+5V	D24	GNT0-
A25	GNT1-	B25	VIO	C25	GNT2-	D25	GND
A26	+5V	B26	PCICLK0	C26	GND	D26	PCICLK1
A27	PCICLK2	B27	+5V	C27	PCICLK3	D27	GND
A28	GND	B28	INTD	C28	+5V	D28	PCIRST
A29	+12V	B29	INTA-	C29	INTB-	D29	INTC-
A30	-12v	B30	REQ3-	C30	GNT3-	D30	GND/3.3V

Table 3-18: PC/104+ Connector Pinouts

3.2.17 Reset Connector

CN Label: **RST1**

CN Type: **1x2 pin header**

CN Location: **See Figure 3-20**

CN Pinouts: **See Table 3-19**

PIN NO.	DESCRIPTION
1	Reset 1
2	Reset 2

Table 3-19: Reset Connector Pinouts

3.2.18 SATA Connectors

CN Label: **S_ATA1, S_ATA2**

CN Type: **1x7 pin header**

CN Location: **See Figure 3-21**

CN Pinouts: **See Table 3-20**

The MOTHERBOARD provides two first-generation SATA ports to connect with SATA drives. The SATA drives transmit data at speeds up to 150MB/s.

PIN NO.	DESCRIPTION
1	GND
2	TX0+
3	TX0
4	GND
5	RX0
6	RX0+
7	GND

Table 3-20: SATA Connector Pinouts

3.2.19 Serial Port2 Connector

CN Label: **COM2**

CN Type: **2x7 pin header**

CN Location: **See Figure 3-22**

CN Pinouts: **See Table 3-21**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD#	2	DSR#
3	RxD	4	RTS#
5	TxD	6	CTS#
7	DTR#	8	RI#
9	GND	10	GND
11	TxD485+	12	TxD485
13	RxD485+	14	RxD485

Table 3-21: COM2 Connector Pinouts

3.2.20 Serial Port3 Connector 3.2.22 Serial Port4 Connector

CN Label: **COM3**

CN Type: **2x5 pin header**

CN Location: **See Figure 3-23**

CN Pinouts: **See Table 3-22**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD#	2	DSR#
3	RX	4	RTS#
5	TX	6	CTS#
7	DTR#	8	RI#
9	GND	10	GND

Table 3-22: COM3 Connector Pinouts

CN Label: **COM4**

CN Type: **2x5 pin header**

CN Location: **See Figure 3-24**

CN Pinouts: **See Table 3-23**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD#	2	DSR#
3	RX	4	RTS#
5	TX	6	CTS#
7	DTR#	8	RI#
9	GND	10	GND

Table 3-23: COM4 Connector Pinouts

3.2.21 USB Connector

CN Label: **USB3**

CN Type: **2x4 pin header**

CN Location: **See Figure 3-25**

CN Pinouts: **See Table 3-24**

Two USB devices can be connected directly to the onboard USB connector. The onboard USB connector is USB 2.0 compliant.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	USBVCC4	2	GND
3	D4F	4	D5F+
5	D4F+	6	D5F
7	GND	8	USBVCC4

Table 3-24: USB Connector Pinouts

3.3 External (Rear Panel) Connectors

Figure 3-26 shows the MOTHERBOARD board rear panel. The peripheral connectors on the back panel can be connected to devices externally when the MOTHERBOARD is installed in a chassis. The peripheral connectors on the rear panel are:

.1 x RJ-45 Ethernet connector
.1 x PS/2 keyboard/mouse connector
.1 x Serial port connector
.4 x USB2.0 connectors
.1 x VGA connector

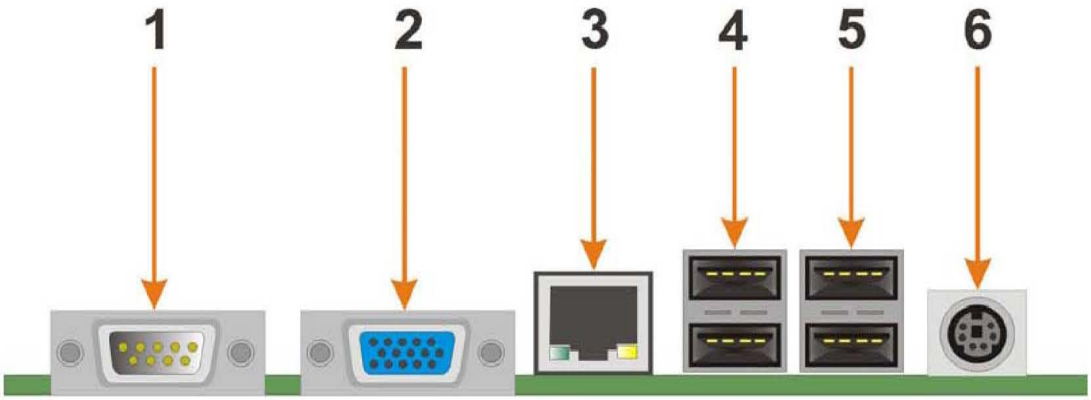


Figure 3-26: NANO-8522 Board Rear Panel

3.3.1 Ethernet Connector

CN Label: J1

CN Type: RJ-45

CN Location: See Figure 3-26 (labeled number 3)

CN Pinouts: See Table 3-25

The MOTHERBOARD is equipped with LAN 10/100/1000-TX Ethernet controller. The Ethernet connector can be directly connected to a Local Area Network (LAN) through a network hub. An RJ-45 Ethernet connector is shown in **Figure 3-27**.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	TX0+	7	TX3+
2	TX0-	8	TX3-
3	TX1+	9	Active +
4	TX2+	10	Active -
5	TX2-	11	LINK +
6	TX1-	12	LINK -

Table 3-25: RJ-45 Ethernet Connector Pinouts

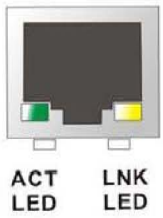


Figure 3-27: RJ-45 Ethernet Connector

The RJ-45 Ethernet connector has two status LEDs, one green and one yellow. The green LED indicates activity on the port and the yellow LED indicates the port is linked. See **Table 3-26**.

STATUS	DESCRIPTION	STATUS	DESCRIPTION
GREEN	Activity	YELLOW	Linked

Table 3-26: RJ-45 Ethernet Connector LEDs

3.3.2 Keyboard/Mouse Connector CN Label: KB/PS1

CN Type: PS/2 connector

CN Location: See Figure 3-26 (labeled number 6)

3.3.3 Serial Port Connectors CN Label: COM1 CN Type: DB-9

CN Location: See Figure 3-26 (labeled number 1)

CN Pinouts: See Table 3-27

The serial ports (COM1) can be connected to a serial communications device directly.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD	2	RX
3	TX	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI		

Table 3-27: Serial Port Pinouts

3.3.4 USB Connectors

CN Label: **USB1, USB2**

CN Type: **USB port**

CN Location: **See Figure 3-26 (labeled number 4 & 5)**

CN Pinouts: **See Table 3-28, Table 3-29**

USB devices can be connected directly to the USB connectors on the rear panel.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	USBVCC0	5	USBVCC0
2	D0F	6	D1F
3	D0F+	7	D1F+
4	GND	8	GND

Table 3-28: USB1 Connector Pinouts

PIN	DESCRIPTION	PIN	DESCRIPTION
1	USBVCC2	5	USBVCC2
2	D2F	6	D3F
3	D2F+	7	D3F+
4	GND	8	GND

Table 3-29: USB2 Connector Pinouts

3.3.5 VGA Connector

CN Label:	**VGA1**
CN Type:	**15-pin**
CN Location:	**See Figure 3-26 (labeled number 2)**

N Pinouts: See Table 3-30

The standard 15-pin VGA connector connects to a CRT or LCD display monitor.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	Red	9	No Connect
2	Green	10	Ground
3	Blue	11	No Connect
4	No Connect	12	DDC DAT
5	Ground	13	Horizontal Synchronization
6	Ground	14	Vertical Synchronization
7	Ground	15	DDC Clock
8	Ground		

Table 3-30: VGA Connector Pinouts

3.4 Onboard Jumpers

NOTE:

A jumper is a metal bridge that is used to close an electrical circuit. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To CLOSE/SHORT a jumper means connecting the pins of the jumper with the plastic clip and to OPEN a jumper means removing the plastic clip from a jumper.

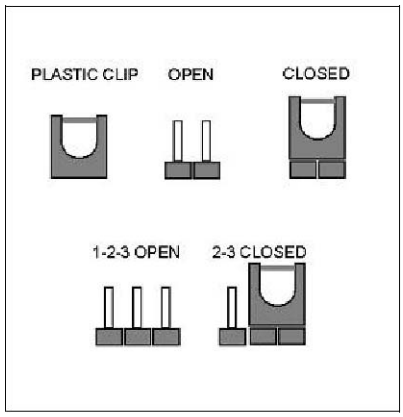
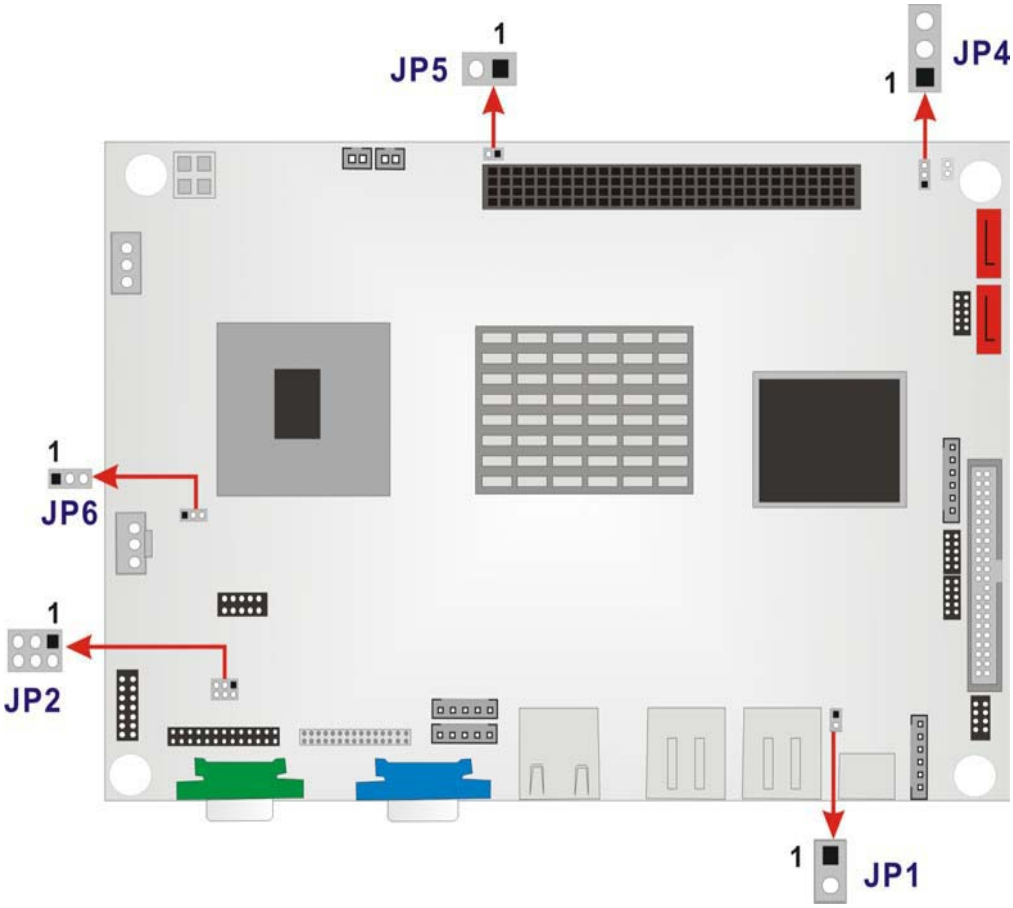


Figure 3-28 Jumper

The MOTHERBOARD board has the following four onboard jumpers:

.CF card setup (JP1)
. Clear CMOS (JP4)
. COM2 RS232/RS422/RS485 selector (JP2)
. LCD Voltage selector (JP6)
. PC104+ SERIRQ net to CN3 pin B1 selector (JP5)



3.4.1 CF Card Setup

Jumper Label: JP1

Jumper Type: 2-pin header

Jumper Settings: See Table 3-31

Jumper Location: See Figure 3-29

Use this jumper (JP1) to set a compact flash card as either the slave device or the master device.

JP1	DESCRIPTION
Open	Slave(Default)
Close	Master

Table 3-31: JP1 Jumper Settings

3.4.2 Clear CMOS Jumper Jumper Label: JP4 Jumper Type: 3-pin header

Jumper Settings: See Table 3-32

Jumper Location: See Figure 3-29

If the MOTHERBOARD fails to boot due to improper BIOS setting, use this jumper to clear the CMOS data and reset the system BIOS information. To do this, use the jumper cap to close pins 2 and 3 for a few seconds then reinstall the jumper clip back to pins 1 and 2.

If the “CMOS Settings Wrong” message displays during the boot up process, try to correct the fault by pressing the F1 to enter the CMOS Setup menu. Do one of the following:

- Enter the correct CMOS setting
- Load Optimal Defaults
- Load Failsafe Defaults.

After done one of the above, save changes and exit the CMOS Setup menu.

JP4	CLEAR CMOS
1-2 closed	Normal (default)
2-3 closed	Clear CMOS

Table 3-32: JP4 Jumper Settings

3.4.3 COM2 Selector

Jumper Label:	**JP2**
Jumper Type:	**6-pin header**
Jumper Settings:	**See Table 3-33**
Jumper Location:	**See Figure 3-29**

JP2	DESCRIPTION
1-2 closed	RS232 (default)
3-4 closed	RS422
5-6 closed	RS485

Table 3-33: JP2 Jumper Settings

3.4.3 LCD Voltage Selector

Jumper Label: JP6

Jumper Type: 3-pin header

Jumper Settings: See Table 3-34

Jumper Location: See Figure 3-29

This jumper allows the user to set the voltage for the LCD panel. Before setting this jumper please refer to the LCD panel user guide to determine the required voltage. After the required voltage is known, make the necessary jumper setting in accordance with the settings shown in **Table 3-34** (LCDVCC signal indicates pin 27-30 defined in **Table 3-16: LVDS Connector Pinouts**).

JP6	DESCRIPTION
1-2 closed	LCDVCC = +3.3V (default)
2-3 closed	LCDVCC = +5V

Table 3-34: JP6 Jumper Settings

3.4.4 PC/104+ Selector Jumper Label: JP5 Jumper Type: 2-pin header

Jumper Settings: See Table 3-35 Jumper Location: See Figure 3-29

JP5	DESCRIPTION
Open	Disconnect (default)
Close	Connect

Table 3-35: JP5 Jumper Settings

Chapter 4

AMI BIOS Setup

4.1 Introduction

A licensed copy of AMI BIOS is preprogrammed into the ROM BIOS. The BIOS setup program allows users to modify the basic system configuration. This chapter describes how to access the BIOS setup program and the configuration options that may be changed.

4.1.1 Starting Setup

The AMI BIOS is activated when the computer is turned on. The setup program can be activated in one of two ways.

1 Press the **DELETE** key as soon as the system is turned on or
2 Press the **DELETE** key when the "**Press Del to enter SETUP**" message appears on the screen.

If the message disappears before the **DELETE** key is pressed, restart the computer and try again.

4.1.2 Using Setup

Use the arrow keys to highlight items, press **ENTER** to select, use the PageUp and PageDown keys to change entries, press **F1** for help and press **ESC** to quit. Navigation keys are shown in.

Key	Function
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
Esc key	Main Menu – Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
"+" key	Increase the numeric value or make changes
"-" key	Decrease the numeric value or make changes

F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 /F3 key	Change color from total 16 colors. F2 to select color forward.
F10 key	Save all the CMOS changes, only for Main Menu

Table 5-1: BIOS Navigation Keys

4.1.3 Getting Help

When **F1** is pressed a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window press **ESC** or the **F1** key again.

4.1.4 Unable to Reboot After Configuration Changes

If the computer cannot boot after changes to the system configuration is made, CMOS defaults. Use the jumper described in Chapter **Chapter 3**, **Section 3.4.2.**

4.1.5 BIOS Menu Bar

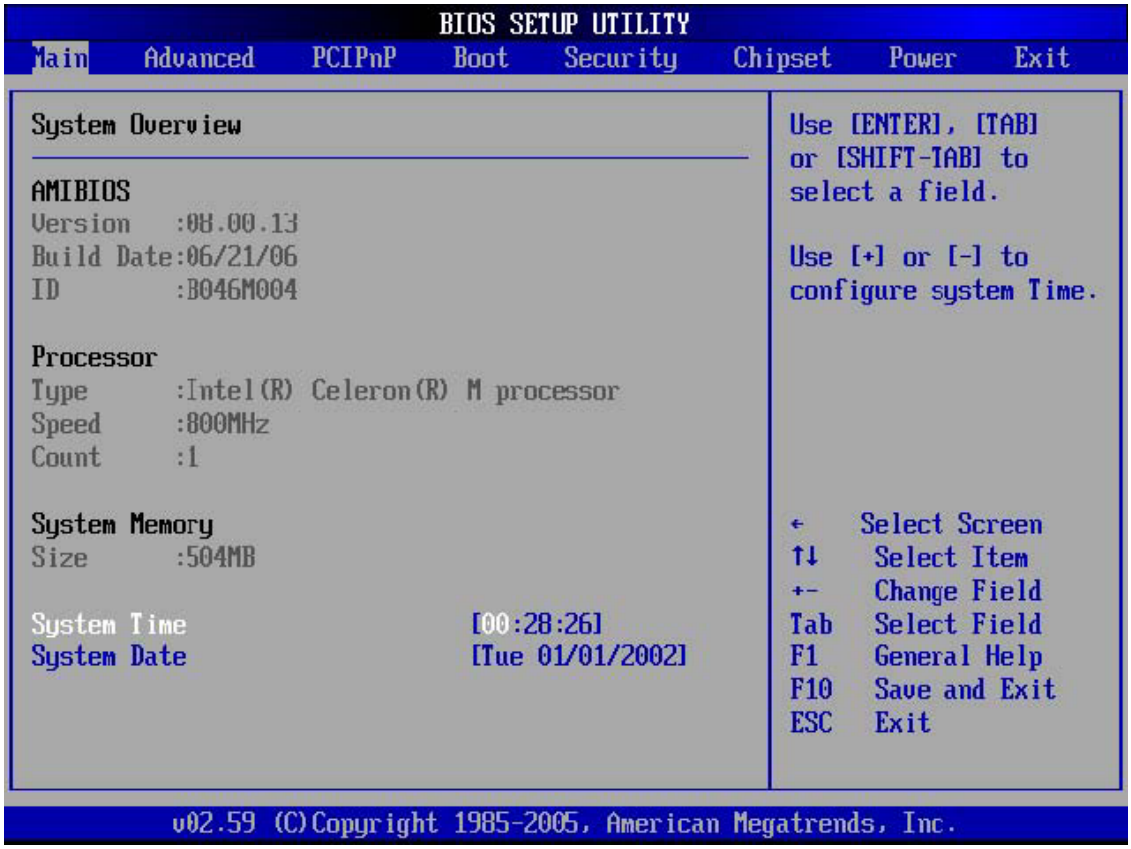
The **menu bar** on top of the BIOS screen has the following main items:

- **Main** Changes the basic system configuration.
- **Advanced** Changes the advanced system settings.
- **PCIPnP** Changes the advanced PCI/PnP Settings
- **Boot** Changes the system boot configuration.
- **Security** Sets User and Supervisor Passwords.
- **Chipset** Changes the chipset settings.
- **Power** Changes power management settings.
- **Exit** Selects exit options and loads default settings

The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

4.2 Main

The **Main** BIOS menu (**BIOS Menu 1**) appears when the **BIOS Setup** program is entered. The **Main** menu gives an overview of the basic system information.



BIOS Menu 1: Main

. **System Overview**

The **System Overview** lists a brief summary of different system components. The fields in **System Overview** cannot be changed. The items shown in the system overview include:

. **AMI BIOS**: Displays auto-detected BIOS information
- o **Version**: Current BIOS version
- o **Build Date**: Date the current BIOS version was made
- o **ID**: Installed BIOS ID
- o **Processor**: Displays auto-detected CPU specifications
- o **Type**: Names the currently installed processor
- o **Speed**: Lists the processor speed
- o **Count**: The number of CPUs on the motherboard

. **System Memory**: Displays the auto-detected system memory.

- o **Size**: Lists memory size

The **System Overview** field also has two user configurable fields:

. **System Time [xx:xx:xx]**

Use the **System Time** option to set the system time. Manually enter the hours, minutes and seconds.

- **System Date [xx/xx/xx]**

  Use the **System Date** option to set the system date. Manually enter the day, month and year.

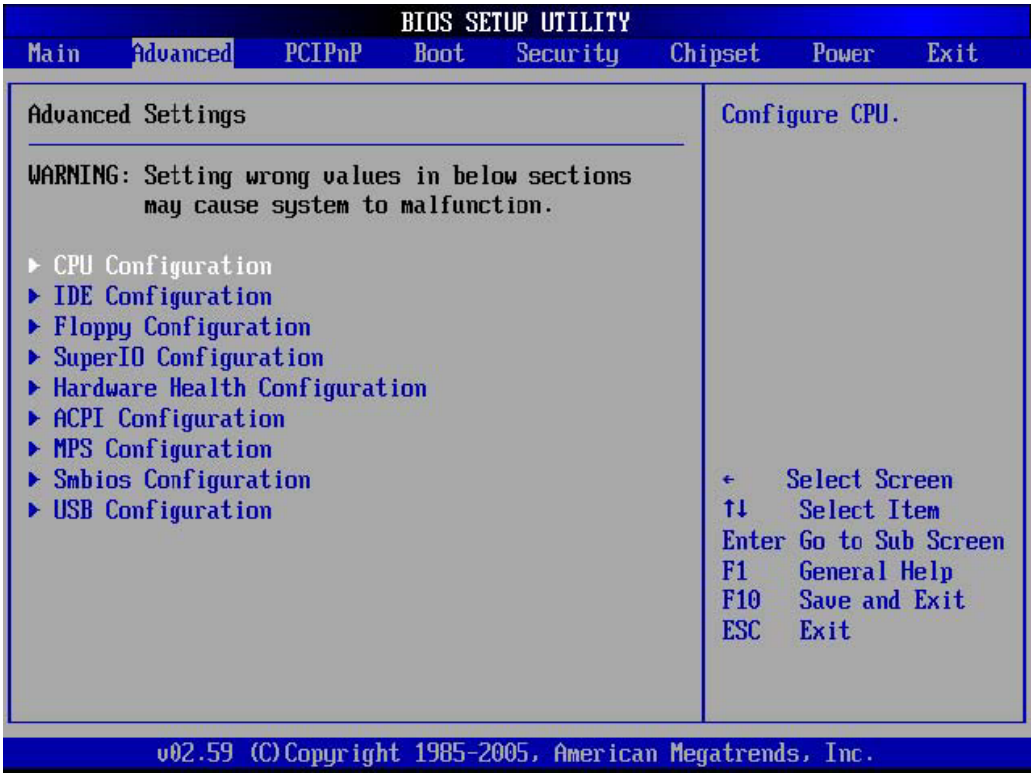
4.3 Advanced

Use the **Advanced** menu (**BIOS Menu 2**) to configure the CPU and peripheral devices through the following sub-menus:

WARNING:

Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.

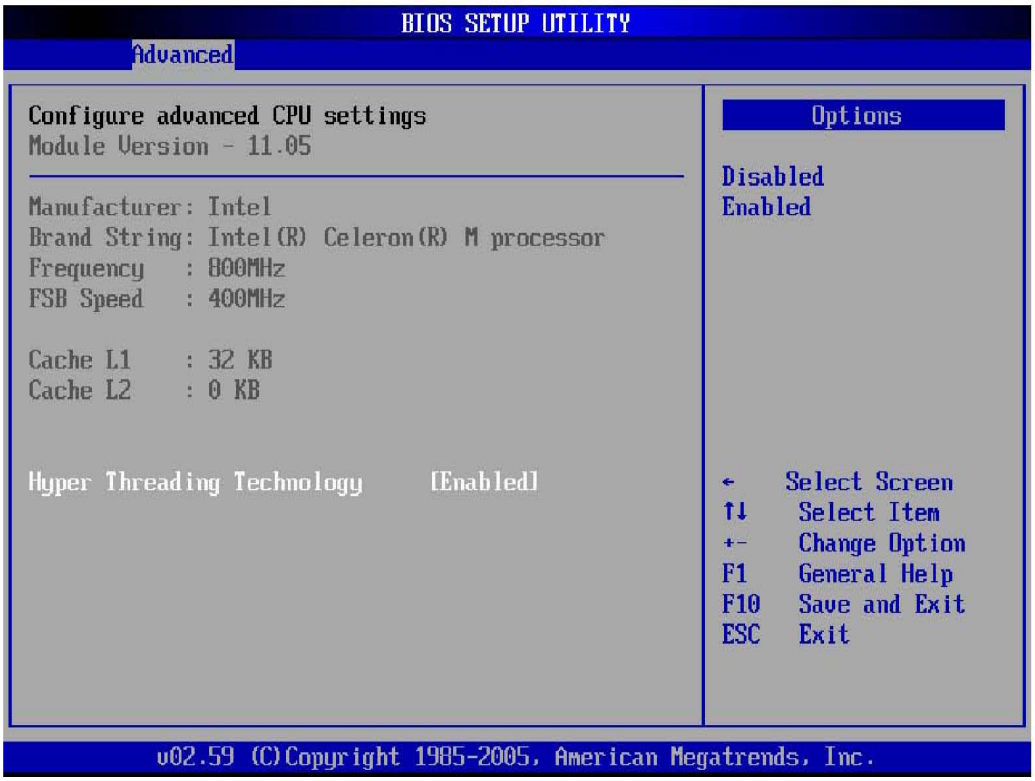
- CPU Configuration (see Section 5.3.1)
- IDE Configuration (see Section 5.3.2)
- Floppy Configuration (see Section 5.3.3)
- SuperIO Configuration (see Section 5.3.4)
- Hardware Health Configuration (see Section 5.3.5)
- ACPI Configuration (see Section 5.3.6)
- MPS Configuration (see Section 5.3.7)
- Smbios Configuration (see Section 5.3.8)
- USB Configuration (see Section 5.3.9)



BIOS Menu 2: Advanced

4.3.1 CPU Configuration

Use the **CPU Configuration** menu (**BIOS Menu 3**) to view detailed CPU specifications and configure the CPU.



BIOS Menu 3: CPU Configuration

The CPU Configuration menu (**BIOS Menu 3**) lists the following CPU details:

- **Manufacturer**: Lists the name of the CPU manufacturer
- **Brand String**: Lists the brand name of the CPU being used
- **Frequency:** Lists the CPU processing speed
- **FSB Speed**: Lists the FSB speed
- **Cache L1**: Lists the CPU L1 cache size
- **Cache L2**: Lists the CPU L2 cache size
- Hyper Threading Technology

The following **CPU Configuration** menu item can be configured.

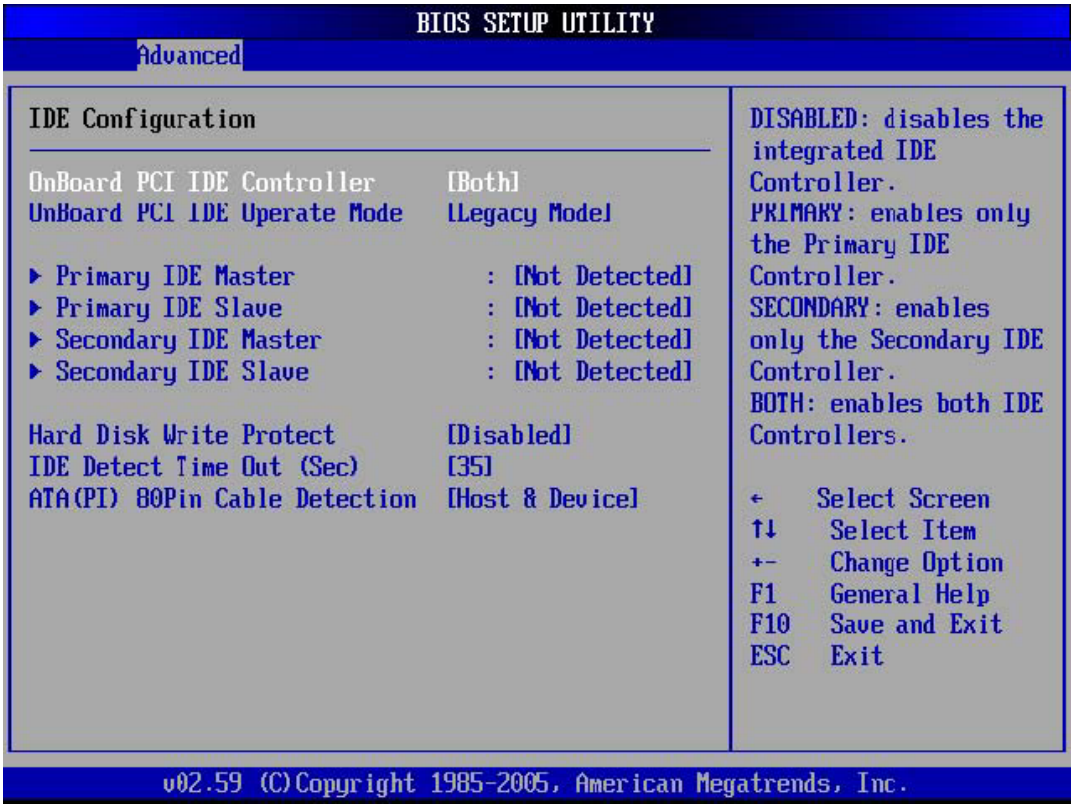
- **Hyper Threading Technology [Enabled]**

  - **Disabled** Disables the use of hyper threading technology

  - **Enabled DEFAULT** Enables the use of hyper threading technology

4.3.2 IDE Configuration

Use the **IDE Configuration** menu (**BIOS Menu 4**) to change and/or set the configuration of the IDE devices installed in the system.


BIOS SETUP UTILITY
Advanced
IDE Configuration
OnBoard PCI IDE Controller [Both]
OnBoard PCI IDE Operate Mode [Legacy Mode]
▶ Primary IDE Master : [Not Detected]
▶ Primary IDE Slave : [Not Detected]
▶ Secondary IDE Master : [Not Detected]
▶ Secondary IDE Slave : [Not Detected]
Hard Disk Write Protect [Disabled]
IDE Detect Time Out (Sec) [35]
ATA(PI) 80Pin Cable Detection [Host & Device]
DISABLED: disables the integrated IDE Controller.
PRIMARY: enables only the Primary IDE Controller.
SECONDARY: enables only the Secondary IDE Controller.
BOTH: enables both IDE Controllers.
← Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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BIOS Menu 4: IDE Configuration

. **OnBoard PCI IDE Controller [Both]**

Use the **OnBoard PCI IDE Controller** BIOS option to specify the IDE channels used by the onboard PCI IDE controller. The following configuration options are available.

. **Disabled**	Prevents the system from using the onboard IDE controller
. **Primary**	Only allows the system to detect the Primary IDE channel, including both the Primary Master and the Primary Slave
. **Secondary**	Only allows the system to detect the Secondary IDE channel, including both the Secondary Master and Secondary Slave
. **Both** **DEFAULT**	Allows the system to detect both the Primary and Secondary IDE channels including the Primary Master, Primary Slave, Secondary Master and Secondary Slave.

. **Onboard PCI IDE Mode [Legacy Mode]** Use the **Onboard PCI IDE Mode** BIOS option to set the running mode for the PCI IDE.

. **Legacy Mode DEFAULT** The PCI IDE mode is the same as the IDE mode. **Native Mode** The PCI IDE mode is the native mode

. **Hard Disk Write Protect [Disabled]**

The **Hard Disk Write Protect** BIOS option protects the hard disks from being overwritten. This menu item is only effective if the device is accessed through the BIOS.

. **Disabled DEFAULT** Allows hard disks to be overwritten. **Enabled** Prevents hard disks from being overwritten

. **IDE Detect Time Out (Sec) [35]**

The **IDE Detect Time Out (Sec)** BIOS option specifies the maximum time (in seconds) the AMI BIOS

will search for IDE devices. This allows fine-tunes the settings to allow for faster boot times. The following configuration options are available.

- 0 seconds
- 5 seconds
- 10 seconds
- 15 seconds
- 20 seconds
- 25 seconds
- 30 seconds
- 35 seconds (Default)

The best setting to use if the onboard IDE controllers are set to a specific IDE disk drive in the AMI BIOS is “0 seconds” and a large majority of ultra ATA hard disk drives can be detected well within “35 seconds” (the default setting).

- **ATA (PI) 80Pin Cable Detection [Host & Device]**

When an Ultra ATA/66, an Ultra ATA/100 or an Ultra ATA/133 IDE hard disk drive is used, an 80-conductor ATA cable must be used. The 80-conductor ATA cable is plug compatible with the standard 40-conductor ATA cable. The system must detect the presence of correct cable so that the AMIBIOS can instruct the drive to run at the correct speed for the cable type detected.

The **ATA (PI) 80Pin Cable Detection** BIOS option determines how the IDE cable will be detected.

- **Host & Device**	**DEFAULT**	Both the motherboard onboard IDE controller and IDE disk drive are used to detect the type of IDE cable used.
- **Host**		The motherboard onboard IDE controller detects the type of IDE cable used.
- **Device**		The IDE disk drive to detects the type of IDE cable used.

- **IDE Master and IDE Slave**

When entering setup, BIOS auto detects the presence of IDE devices. BIOS displays the status of the auto detected IDE devices. The following IDE devices are detected and are shown in the **IDE**

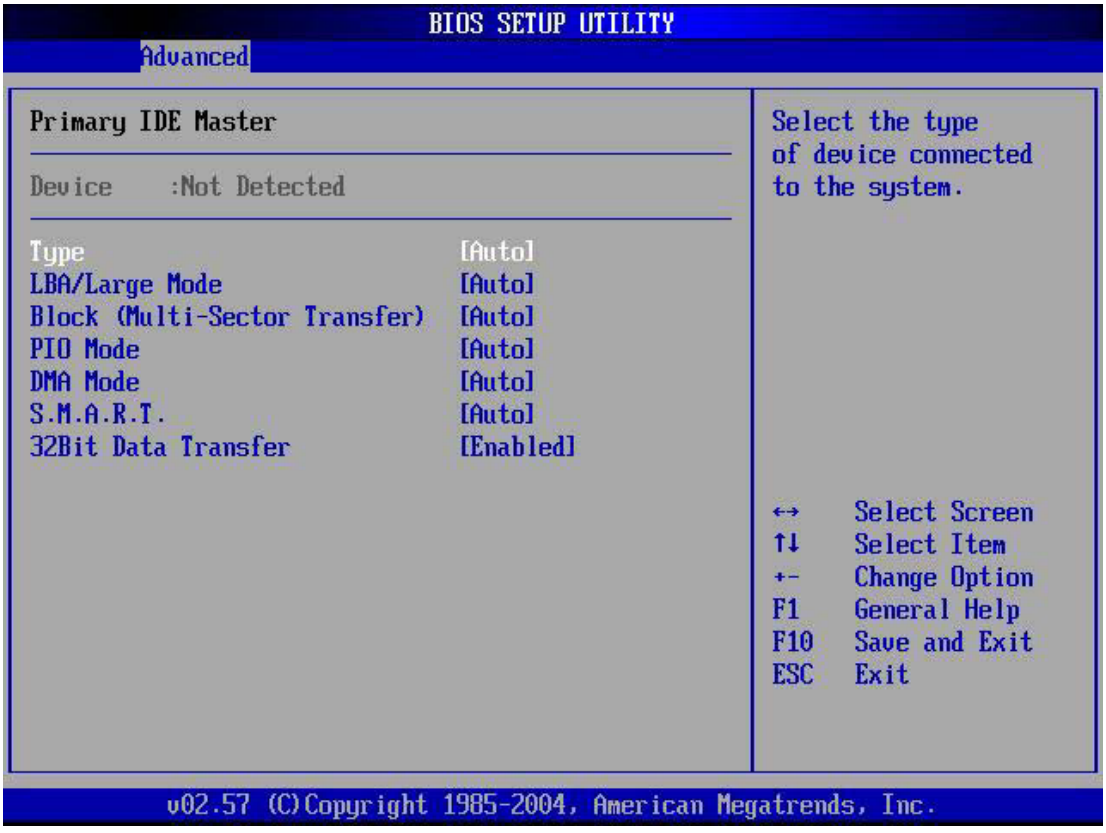
Configuration menu:

- Primary IDE Master
- Primary IDE Slave
- Secondary IDE Master
- Secondary IDE Slave

The **IDE Configuration** menu (**BIOS Menu 4**) allows changes to the configurations for the IDE devices installed in the system. If an IDE device is detected, and one of the above listed four BIOS configuration options are selected, the IDE configuration options shown in **Section 5.3.2.1** appear.

4.3.2.1 IDE Master, IDE Slave

Use the **IDE Master** and **IDE Slave** configuration menu to view both primary and secondary IDE device details and configure the IDE devices connected to the system.



BIOS Menu 5: IDE Master and IDE Slave Configuration

Auto-Detected Drive Parameters

The “grayed-out” items in the left frame are IDE disk drive parameters automatically detected from the

firmware of the selected IDE disk drive. The drive parameters are listed as follows:

. **Type**: Lists the device type (e.g. hard disk, CD-ROM etc.)
. **LBA Mode**: Indicates whether the LBA (Logical Block Addressing) is a method of addressing data on a disk drive is supported or not.
. **Block Mode**: Block mode boosts IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred
per interrupt if block mode is not used. Block mode allows transfers of up to 64 KB per interrupt.
. **PIO Mode**: Indicates the PIO mode of the installed device.
. **DMA Mode**: Indicates the highest Asynchronous DMA Mode that is supported.
. **S.M.A.R.T.**: Indicates whether or not the Self-Monitoring Analysis and Reporting Technology protocol is supported.

. **Type [Auto]**

Use the **Type** BIOS option select the type of device the AMIBIOS attempts to boot from after the Power-On Self-Test (POST) is complete.

. **Not Installed**		BIOS is prevented from searching for an IDE disk drive on the specified channel.
. **Auto**	**DEFAULT**	The BIOS auto detects the IDE disk drive type attached to the specified channel. This setting should be used if an IDE hard disk drive is attached to the specified channel.
. **CD/DVD**		The CD/DVD option specifies that an IDE CD-ROM drive is attached to the specified IDE channel. The BIOS does not attempt to search for other types of IDE disk drives on the specified channel.
. **ARMD**		This option specifies an ATAPI Removable Media Device. These include, but are not limited to:

. **ZIP**

- **LS-120**
- **LBA/Large Mode [Auto]**

Use the **LBA/Large Mode** option to disable or enable BIOS to auto detects LBA (Logical Block Addressing). LBA is a method of addressing data on a disk drive. In LBA mode, the maximum drive capacity is 137 GB.

- **Disabled**		BIOS is prevented from using the LBA mode control on the specified channel.
- **Auto**	**DEFAULT**	BIOS auto detects the LBA mode control on the specified channel.

- **Block (Multi Sector Transfer) [Auto]**

Use the **Block (Multi Sector Transfer)** to disable or enable BIOS to auto detect if the device supports multi-sector transfers.

Disabled	BIOS is prevented from using Multi-Sector Transfer on the specified channel. The data to and from the device occurs one sector at a time.
Auto DEFAULT	BIOS auto detects Multi-Sector Transfer support on the drive on the specified channel. If supported the data transfer to and from the device occurs multiple sectors at a time.

PIO Mode [Auto]

Use the **PIO Mode** option to select the IDE PIO (Programmable I/O) mode program timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases.

- **Auto**	**DEFAULT**	BIOS auto detects the PIO mode. Use this value if the IDE disk drive support cannot be determined.
- **0**		PIO mode 0 selected with a maximum transfer rate of 3.3MBps
- **1**		PIO mode 1 selected with a maximum transfer rate of 5.2MBps
- **2**		PIO mode 2 selected with a maximum transfer rate of 8.3MBps
- **3**		PIO mode 3 selected with a maximum transfer rate of 11.1MBps
- **4**		PIO mode 4 selected with a maximum transfer rate of 16.6MBps

(This setting generally works with all hard disk drives manufactured after 1999. For other disk drives, such as IDE CD-ROM drives, check the specifications of the drive.)

- **DMA Mode [Auto]** Use the **DMA Mode** BIOS selection to adjust the DMA mode options.

  Auto DEFAULT BIOS auto detects the DMA mode. Use this value if the IDE disk drive support cannot be determined.

- **S.M.A.R.T [Auto]**

  Use the **S.M.A.R.T** option to auto-detect, disable or enable Self-Monitoring Analysis and Reporting Technology (SMART) on the drive on the specified channel. **S.M.A.R.T** predicts impending drive failures. The **S.M.A.R.T** BIOS option enables or disables this function.

  Auto DEFAULT BIOS auto detects HDD SMART support.
  Disabled Prevents BIOS from using the HDD SMART feature.

  Enabled Allows BIOS to use the HDD SMART feature

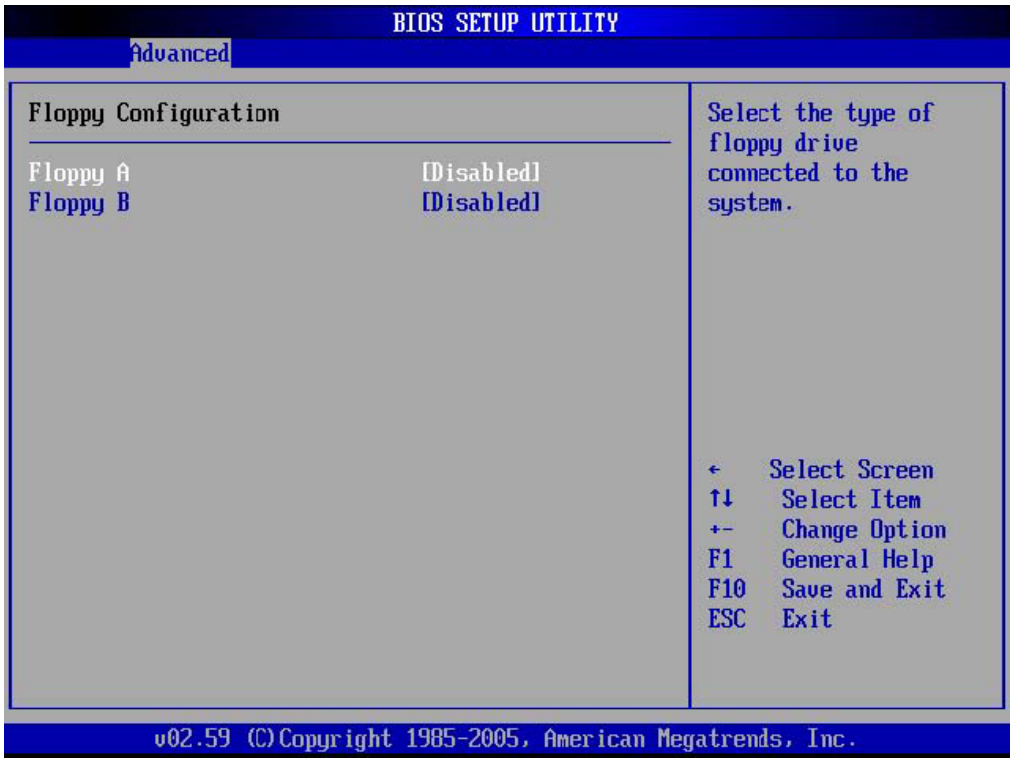
- **32Bit Data Transfer [Disabled]** Use the **32Bit Data Transfer** BIOS option to enables or disable 32-bit data transfers.

  Disabled DEFAULT Prevents the BIOS from using 32-bit data transfers.

  Enabled Allows BIOS to use 32-bit data transfers on supported hard disk drives.

4.3.3 Floppy Configuration

Use the **Floppy Configuration** menu (**BIOS Menu 6**) to set or change the configurations for floppy disk drives.



BIOS Menu 6: Floppy Configuration

. **Floppy A [Disabled]**

The **Floppy A** configuration option determines the types of the floppy drive installed in the system. The following configuration options are available.

. Disabled (default)
. 360 KB 5¼”
. 1.2 MB 5¼”
. 720 KB 3 ½”
. 1.44 MB 3½”
. 2.88 MB 3½”

. **Floppy B [Disabled]**

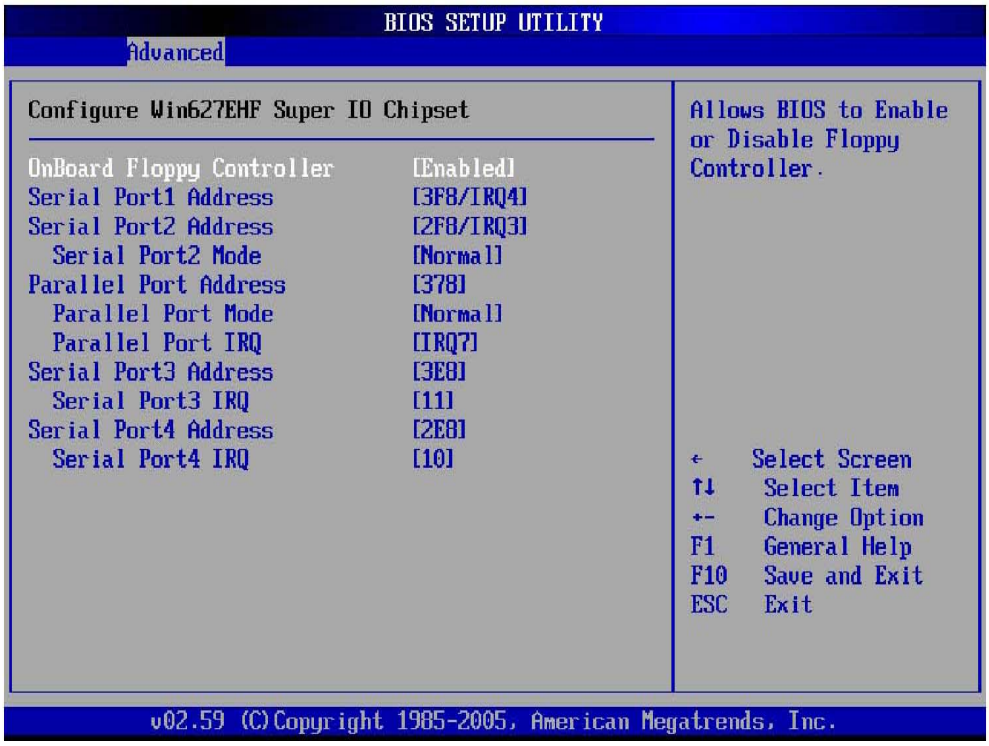
The **Floppy B** configuration option determines the types of the floppy drive installed in the system. The following configuration options are available.

. Disabled (default)
. 360 KB 5¼”
. 1.2 MB 5¼”

- 720 KB 3 ½”
- 1.44 MB 3½”
- 2.88 MB 3½”

4.3.4 Super IO Configuration

Use the **Super IO Configuration** menu (**BIOS Menu 7**) to set or change the configurations for the FDD controllers, parallel ports and serial ports.



BIOS Menu 7: Super IO Configuration

- **On Board Floppy Controller [Enabled] Disabled** Allows BIOS to disable the floppy controller
  - **Enabled DEFAULT** Allows BIOS to enable the floppy controller

- **Serial Port1 Address [3F8/IRQ4]** Use the **Serial Port1 Address** option to select the Serial Port 1 base address.

. **Disabled**		No base address is assigned to Serial Port 1
. **3F8/IRQ4**	**DEFAULT**	Serial Port 1 I/O port address is 3F8 and the interrupt address is IRQ4

. **3E8/IRQ4**	Serial Port 1 I/O port address is 3E8 and the interrupt address is IRQ4
. **2E8/IRQ3**	Serial Port 1 I/O port address is 2E8 and the interrupt address is IRQ3

. **Serial Port2 Address [2F8/IRQ3]** Use the **Serial Port2 Address** option to select the Serial Port 2 base address.

. **Disabled**		No base address is assigned to Serial Port 2
. **2F8/IRQ3**	**DEFAULT**	Serial Port 2 I/O port address is 3F8 and the interrupt address is IRQ3
. **3E8/IRQ4**		Serial Port 2 I/O port address is 3E8 and the interrupt address is IRQ4
. **2E8/IRQ3**		Serial Port 2 I/O port address is 2E8 and the interrupt address is IRQ3

. **Serial Port2 Mode [Normal]** Use the **Serial Port2 Mode** option to select the Serial Port2 operational mode.

. **Normal DEFAULT** Serial Port 2 mode is normal. **IrDA** Serial Port 2 mode is IrDA. **ASK IR** Serial Port 2 mode is ASK IR

. **Parallel Port Address [378]** Use the **Parallel Port Address** option to select the parallel port base address.

. **Disabled** No base address is assigned to the Parallel Port. **378 DEFAULT** Parallel Port I/O port address is 378. **278** Parallel Port I/O port address is 278. **3BC** Parallel Port I/O port address is 3BC

. **Parallel Port Mode [Normal]**

Use the **Parallel Port Mode** option to select the mode the parallel port operates in.

. **Normal**	**DEFAULT**	The normal parallel port mode is the standard mode for parallel port operation.
. **Bi-directional**		Parallel port outputs are 8-bits long. Inputs are accomplished by reading 4 of the 8 bits on the status register.
. **ECP**		The parallel port operates in the extended capabilities port (ECP) mode. The ECP mode supports bi-directional communication between the system and the parallel port device and the transmission rates between the two are much faster than the SPP mode.
. **EPP**		The parallel port operates in the enhanced parallel port mode (EPP). The EPP mode supports bi-directional communication between the system and the parallel port device and the transmission rates between the two are much faster than the Normal mode.
. **ECP & EPP**		The parallel port operates in the extended capabilities port (ECP) mode. The ECP mode supports bi-directional communication between the

system and the parallel port device and the
transmission rates between the two are much faster
than the Normal mode
The parallel port is also be compatible with EPP devices described above

- **Parallel Port IRQ [IRQ7]** Use the **Parallel Port IRQ** selection to set the parallel port interrupt address.
  - **IRQ5** IRQ5 is assigned as the parallel port interrupt address **IRQ7 DEFAULT** IRQ7 is assigned as the parallel port interrupt address
- **Serial Port3 Address [3E8]** Use the **Serial Port3 Address** option to select the base addresses for serial port 3
  - **Disabled** No base address is assigned to serial port 3 **3E8 DEFAULT** Serial port 3 I/O port address is 3E8 **2F8** Serial port 3 I/O port address is 2F8 **3E8** Serial port 3 I/O port address is 3E8 **2E8** Serial port 3 I/O port address is 2E8 **2F0** Serial port 3 I/O port address is 2F0 **2E0** Serial port 3 I/O port address is 2E0
- **Serial Port3 IRQ [11]** Use the **Serial Port3 IRQ** option to select the interrupt address for serial port 3.
  - **4** Serial port 3 IRQ address is 4
  - **9** Serial port 3 IRQ address is 9
  - **10** Serial port 3 IRQ address is 10
  - **11 DEFAULT** Serial port 3 IRQ address is 11
- **Serial Port4 Address [2E8]** Use the **Serial Port4 IRQ** option to select the interrupt address for serial port 4.
  - **Disabled** No base address is assigned to serial port 3
  - **3F8** Serial port 4 I/O port address is 3F8
  - **2F8** Serial port 4 I/O port address is 2F8
  - **3E8** Serial port 4 I/O port address is 3E8

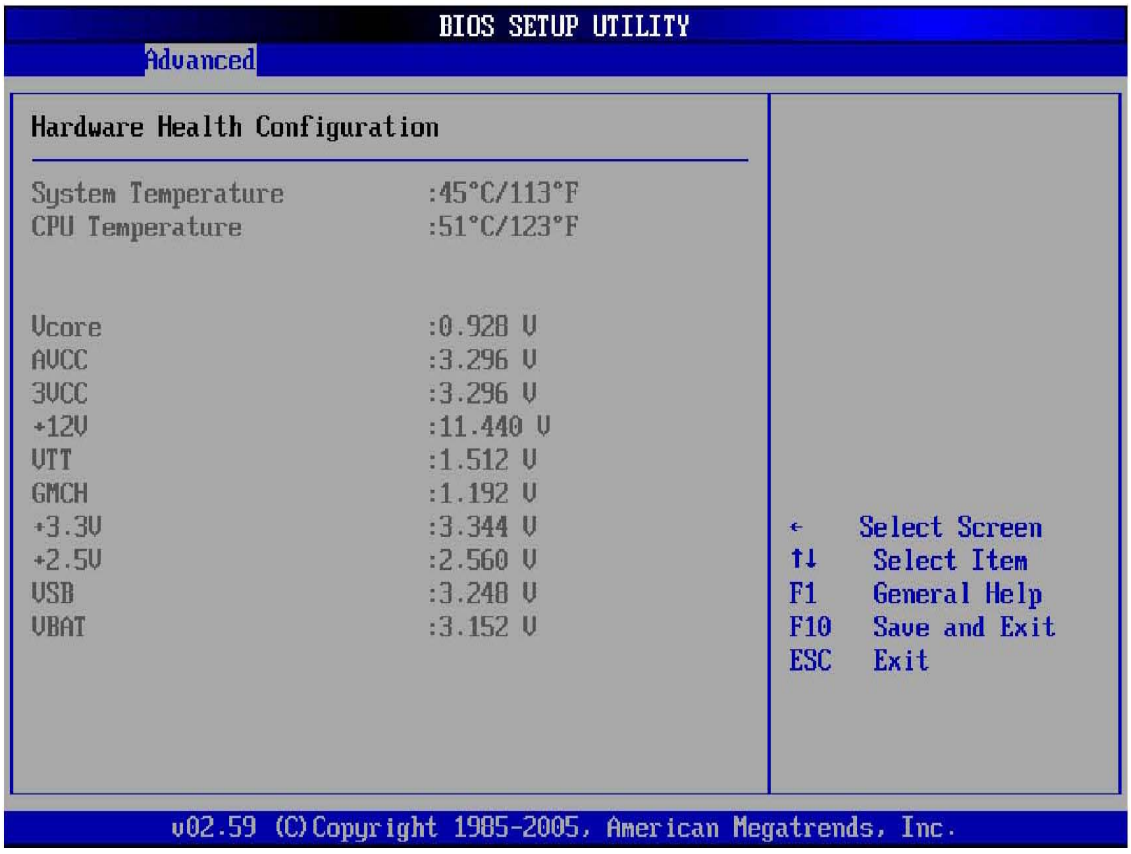
- **2E8 DEFAULT** Serial port 4 I/O port address is 2E8
- **2F0** Serial port 4 I/O port address is 2F0
- **2E0** Serial port 4 I/O port address is 2E0

Serial Port4 IRQ [10] Use the **Serial Port4 IRQ** option to select the interrupt address for serial port 4.

- **3** Serial port 4 IRQ address is 3
- **9** Serial port 4 IRQ address is 9
- **10 DEFAULT** Serial port 4 IRQ address is 10
- **11** Serial port 4 IRQ address is 11

4.3.5 Hardware Health Configuration

The **Hardware Health Configuration** menu (**BIOS Menu 8**) shows the operating temperature, fan speeds and system voltages.



BIOS Menu 8: Hardware Health Configuration

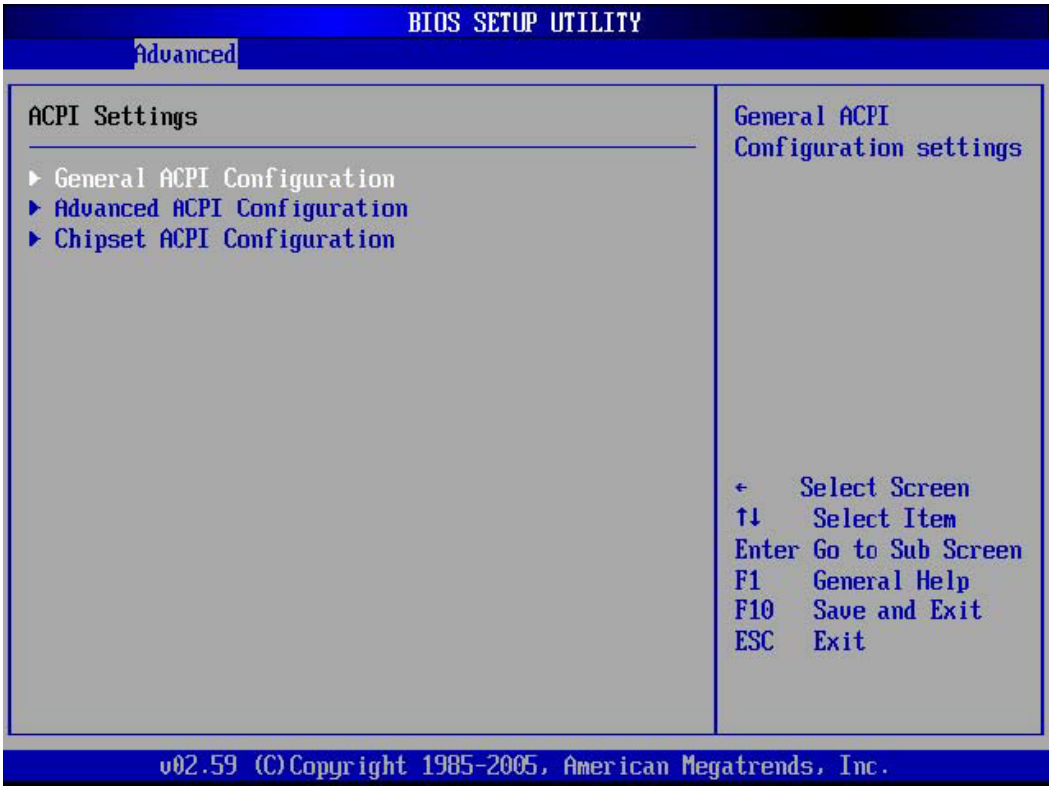
The following system parameters and values are shown. The system parameters that are

monitored are:

- **System Temperatures**: The following system temperatures are monitored
  - o System Temperature
  - o CPU Temperature
- **Voltages**: The following system voltages are monitored
  - o Vcore
  - o AVCC
  - o 3VCC
  - o +12V
  - o VTT
  - o GMCH
  - o +3.3V
  - o +2.5V
  - o VSB
  - o VBAT

4.3.6 ACPI Configuration

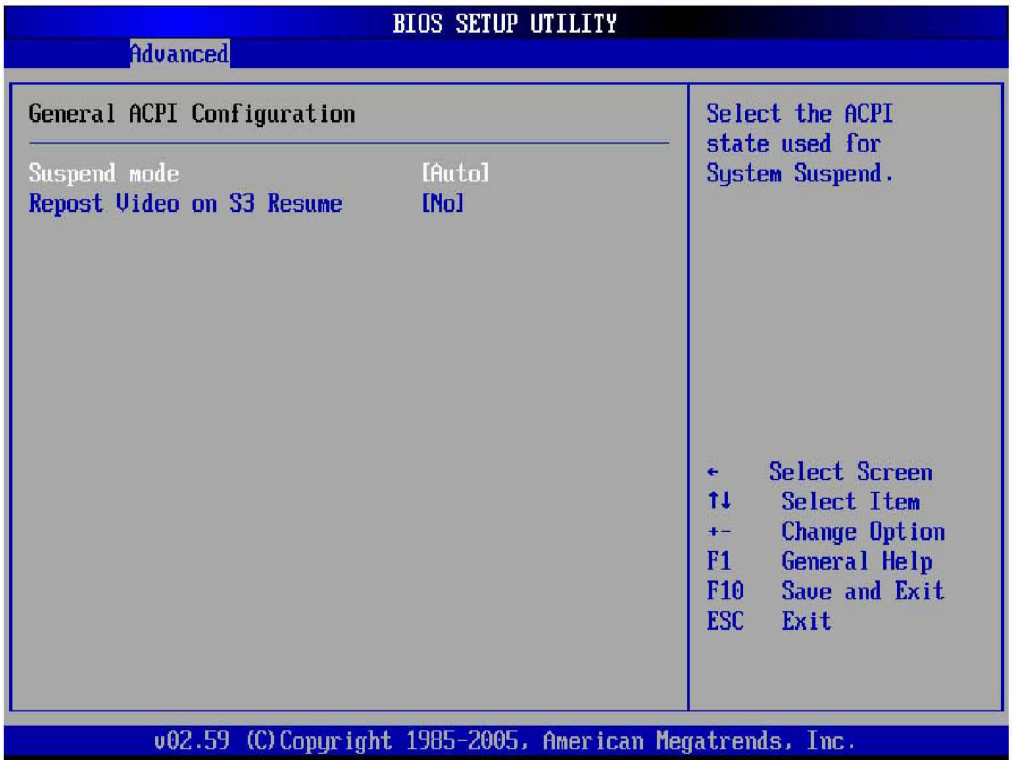
The **ACPI Configuration** menu (**BIOS Menu 9**) configures the Advanced Configuration and Power Interface (ACPI) and Power Management (APM) options.



BIOS Menu 9: ACPI Configuration

4.3.6.1 General ACPI Configuration

Use the **General ACPI Configuration** menu (**BIOS Menu 10**) to select the ACPI state when the system is suspended.



BIOS Menu 10: General ACPI Configuration

. **Suspend Mode [Auto]**

Use the **Suspend Mode** option to specify the sleep state the system enters when it is not being used.

. **S1 (POS)**	The system enters S1(POS) sleep state. The system appears off. The CPU is stopped; RAM is refreshed; the system is running in a low power mode.
. **S3 (STR)**	The system enters a S3(STR) sleep state. The CPU has no power; RAM is in slow refresh; the power supply is in a reduced power mode.
. **Auto** **DEFAULT**	The BIOS automatically selects system.

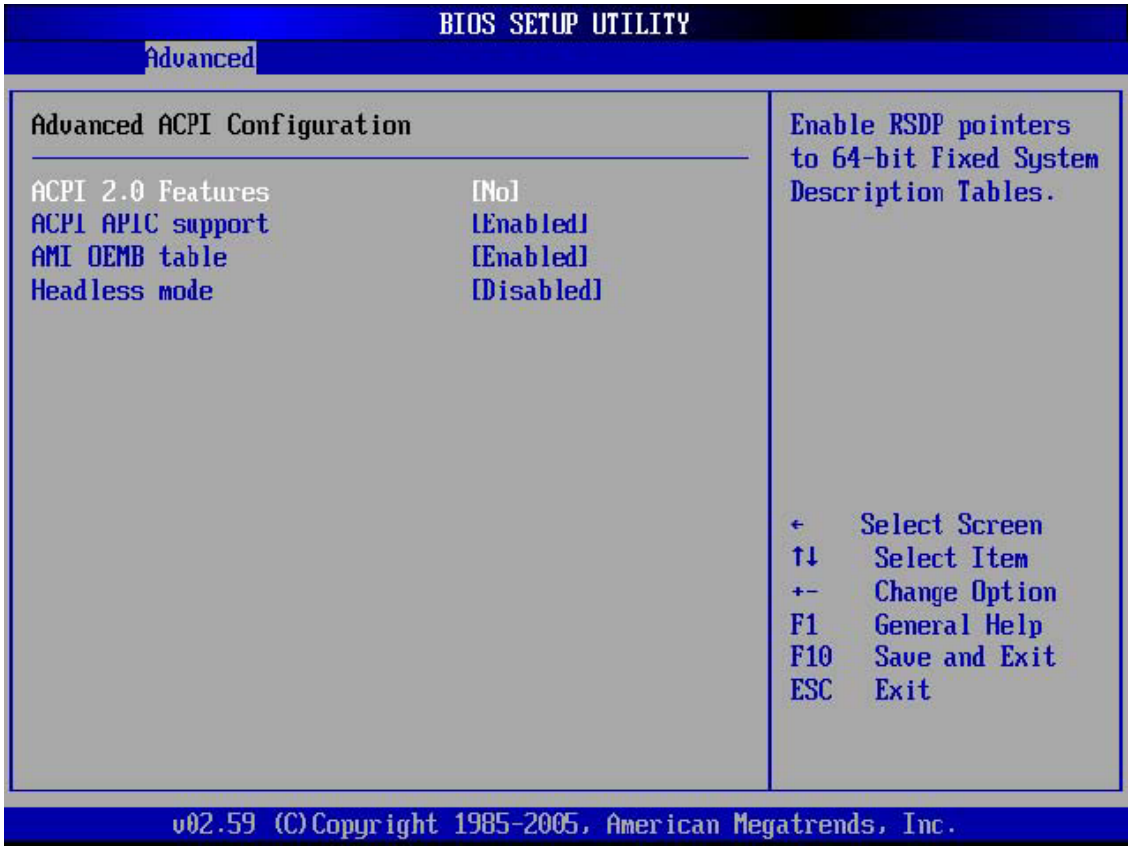
. **Repost Video on S3 Resume [No]**

Use the **Repost Video on S3 Resume** to determine whether the VGA BIOS post will be invoked after the system is roused from an S3 (STR) suspend state.

- **No DEFAULT** The VGA BIOS post is not invoked
- **Yes** The VGA BIOS post is invoked

4.3.6.2 Advanced ACPI Configuration

Use the **Advanced ACPI Configuration** menu (**BIOS Menu 11**) to select the ACPI state when the system is suspended.



BIOS Menu 11: Advanced ACPI Configuration

ACPI 2.0 Features [No]

Use the **ACPI 2.0 Features** option to enable the ACPI (Advanced Configuration and Power Interface) features. By enabling this feature the system RSDP (Root System Description Pointer) is able to obtain physical addresses for other 64-bit fixed system

description tables.

No Yes DEFAULT

RSDP pointers to 64-bit fixed systems are not provided to the system RSDP pointers to 64-bit fixed systems are provided to the system

ACPI APIC Support [Enabled]

Use the **ACPI APIC Support** option to add a pointer to an ACPI APIC table in the RSDT (Root System Description Table). The RSDT is an array of pointers that direct the system to the physical addresses of other description tables. The RSDT is the main ACPI table. The RSDP is located in low memory space of the system and provides the physical address of the RSDT. The RSDT itself is identified in memory because it starts with the signature "RSDT."

Disabled Pointers to the APIC APIC table are not be provided in the RSDT

Enabled DEFAULT Pointers to the APIC APIC table are provided in the RSDT

AMI OEMB table [Enabled]

Use the **AMI OEMB table** option to add a pointer to an OEMB table in the RSDT table and the Extended System Description Table (XSDT), which accommodates physical addresses of description headers that are larger than 32-bits. Notice that both the XSDT and the RSDT can be pointed to by the RSDP structure.

Disabled Pointers to the AMI OEMB table are not provided in the RSDT and the XSDT

Enabled DEFAULT Pointers to the AMI OEMB table are provided in the RSDT and the XSDT

Headless Mode [Disabled]

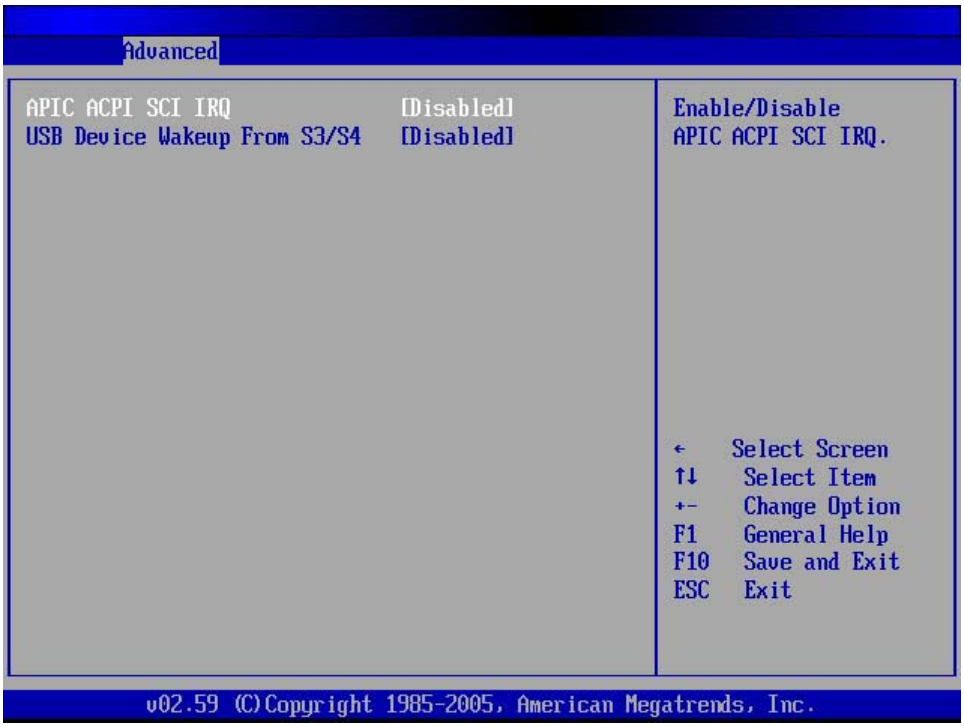
Use the **Headless Mode** option to update the ACPI FACP (Fixed ACPI Description Table) to indicate headless operations, i.e. a computer without a monitor, keyboard and mouse.

Disabled DEFAULT The FACP is not updated to indicate headless mode

Enabled The FACP is updated to indicate headless mode

4.3.6.3 Chipset ACPI Configuration

Use the **Advanced ACPI Configuration** menu (**BIOS Menu 12**) to select the ACPI state when the system is suspended.



BIOS Menu 12: Chipset ACPI Configuration

- **APIC ACPI SCI IRQ [Disabled]**

Use **APIC ACPI SCI IRQ** option to enable the system to send a flag report to the ACPI OS if a SCI IRQ interrupt event is made via the APIC.

- **Disabled DEFAULT** No flag report is sent to the ACPI OS when there is a "SCI IRQ" interrupt event.
- **Enabled** Flag report is sent to the ACPI OS when there is a "SCI IRQ" interrupt event is made via the APIC.

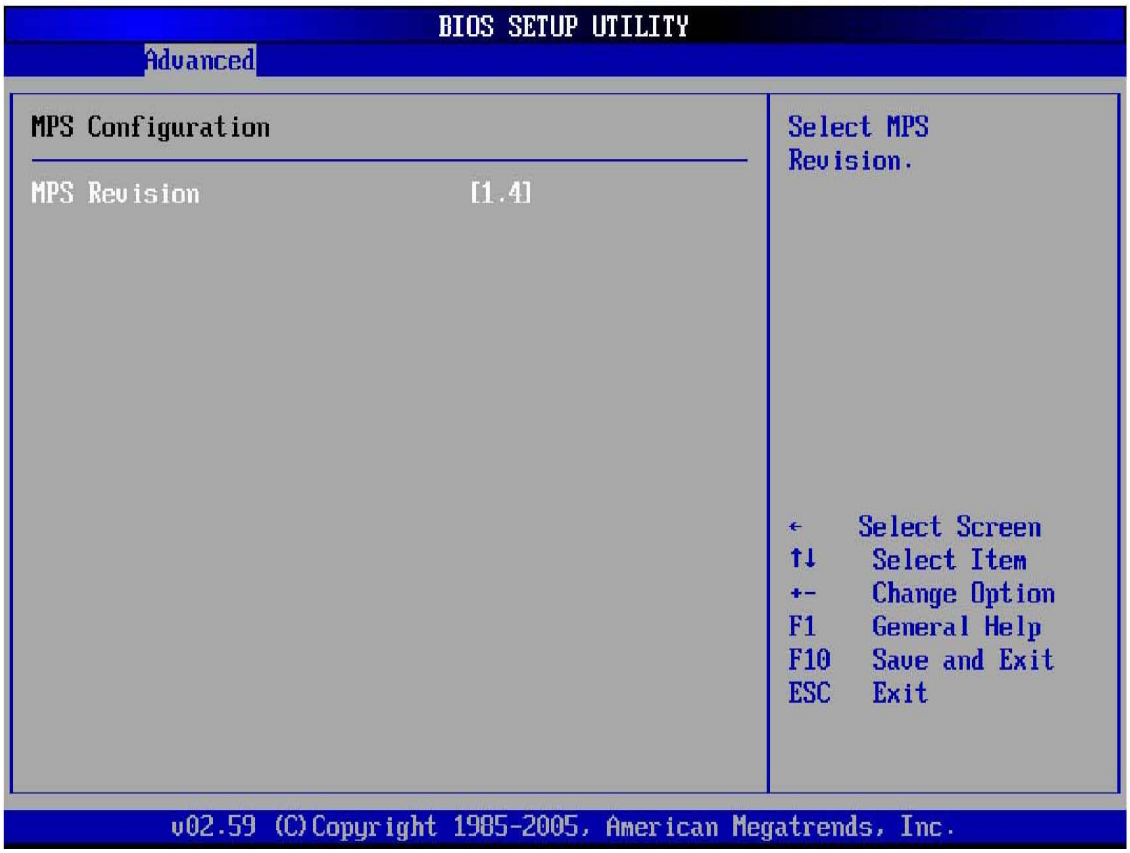
- **USB Device Wakeup From S3/S4 [Disabled]**

The **USB Device Wakeup From S3/S4** BIOS function enables activity on the specified USB device to rouse the system from a sleep state.

- **Disabled DEFAULT** Activity on the USB cannot rouse the system

- **Enabled** Activity on the USB can rouse the system

4.3.7 MPS Configuration Use the MPS Configuration menu (BIOS Menu 13) to select `he multi-processor table.



BIOS Menu 13: MPS Configuration

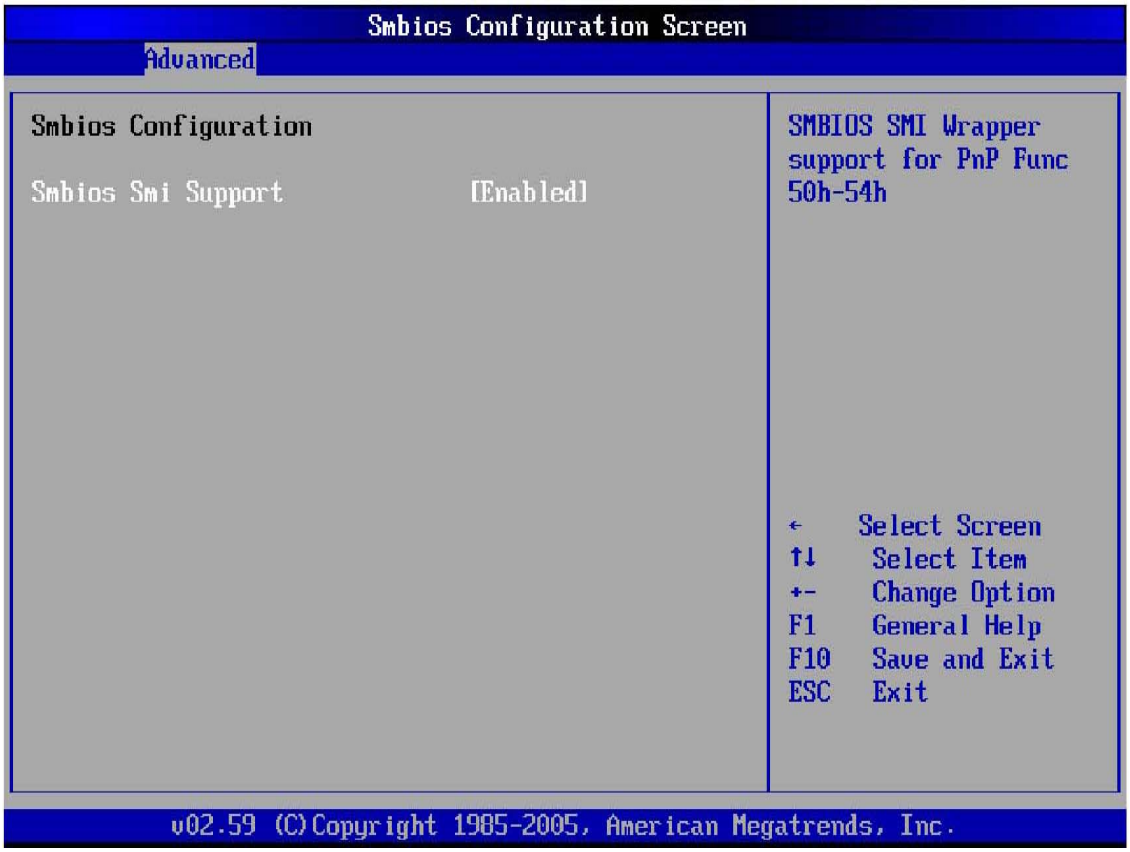
- **MPS Revision [1.4]**

  Use the **Multiprocessor Specification (MPS) for OS** option to specify the MPS version to be used.

  - **1.1** MPS version 1.1 is used

  - **1.4 DEFAULT** MPS version 1.4 is used

4.3.8 Smbios Configuration Use the **Smbios Configuration** menu (**BIOS Menu 14**) to configure SMBIOS parameters.



BIOS Menu 14: Smbios Configuration

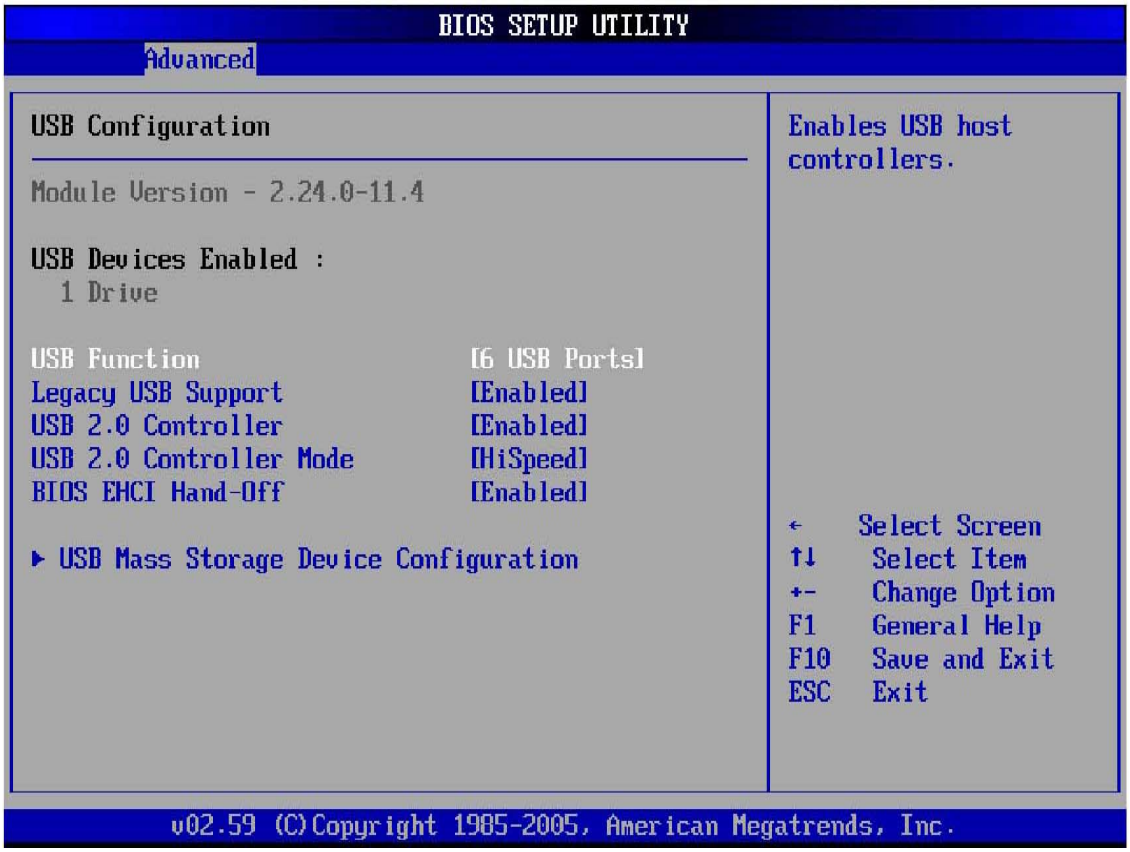
. **Smbios Smi Support [Enabled]**

Use the **Smbios Smi Support** to enable the system to support the SMBIOS SMI wrapper for the PnP function 50h – 54h.

. **Disabled**		SMBIOS SMI wrapper for the PnP function 50h – 54h not supported
. **Enabled**	**DEFAULT**	SMBIOS SMI wrapper for the PnP function 50h – 54h supported

4.3.9 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 15**) to read USB configuration information and configure the USB settings.



BIOS Menu 15: USB Configuration

- **USB Configuration** The **USB Configuration** field shows the system USB configuration. The items listed are:
  - Module Version: 2.24.0-11.4
- **USB Devices Enabled** The **USB Devices Enabled** field lists the USB devices that are enabled on the system
- **USB Function [6 USB Ports]**
  Use the **USB Function** BIOS option to enable USB host controllers.
  - **Disabled** USB function support disabled **2 USB Ports** The USB controller activates 2 USB ports
- **4 USB Ports** The USB controller activates 4 USB ports
- **6 USB Ports DEFAULT** The USB controller activates 6 USB ports
- **Legacy USB Support [Enabled]**

Use the **Legacy USB Support** BIOS option to enable USB mouse and USB keyboard support.

Normally if this option is not enabled, any attached USB mouse or USB keyboard does not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there is no USB driver loaded onto the system.

. **Disabled**		Legacy USB support disabled
. **Enabled**	**DEFAULT**	Legacy USB support enabled
. **Auto**		The Legacy USB support is automatically detected and enabled.

. **USB 2.0 Controller [Enabled]** Use the **USB 2.0 Controller** BIOS option to enable or disable the USB 2.0 controller

. **Enabled DEFAULT** USB 2.0 controller enabled . **Disabled** USB 2.0 controller disabled

. **USB2.0 Controller Mode [HiSpeed]** Use the **USB2.0 Controller Mode** option to set the speed of the USB2.0 controller.

. **FullSpeed** The controller is capable of operating at 12Mb/s . **HiSpeed DEFAULT** The controller is capable of operating at 480Mb/s

. **BIOS EHCI Handoff [Enable]**

Use the **BIOS EHCI Handoff** option for systems running OSes that do not have EHCI hand-off support. The EHCI ownership change is managed by the EHCI driver.

. **Disabled** Systems with OSes that do not support EHCI can use the EHCI handoff functionality. . **Enabled DEFAULT** Systems with OSes that do not support EHCI cannot use the EHCI handoff functionality.

. **USB Mass Storage Device Configuration**

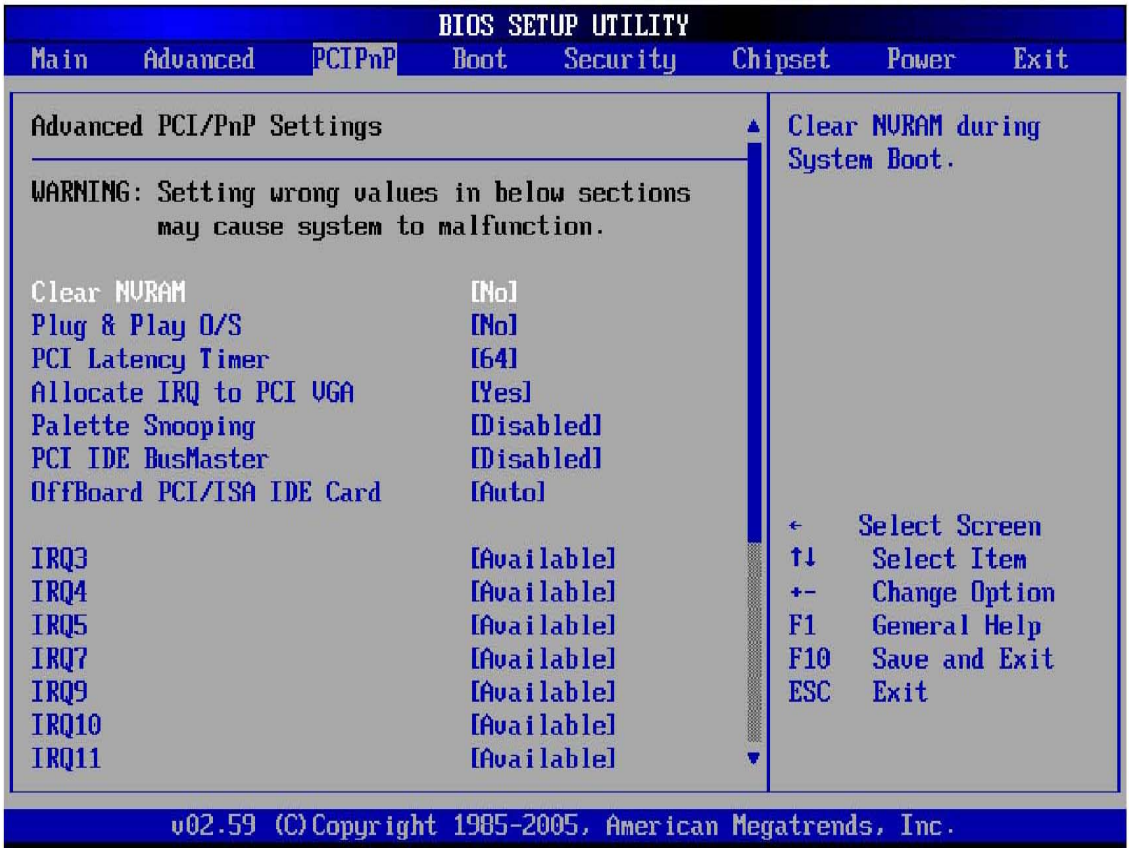
The **USB Mass Storage Device Configuration** field appears if a USB drive is connected to one of the USB ports or connectors. If this option is selected a menu appears.

4.4 PCI/PnP

Use the **PCI/PnP** menu (**BIOS Menu 16**) to configure advanced PCI and PnP settings.

WARNING!

Setting wrong values for the BIOS selections in the PCIPnP BIOS menu may cause the system to malfunction.



BIOS Menu 16: PCI/PnP Configuration

. **Clear NVRAM [No]** Use the **Clear NVRAM** option to specify if the NVRAM (Non-Volatile RAM) is cleared

when the power is turned off. **No DEFAULT** System does not clear NVRAM during system boot

. **Yes** System clears NVRAM during system boot

. **Plug & Play O/S [No]** Use the **Plug & Play O/S** BIOS option to

specify whether system plug and play devices are configured by the operating system or the BIOS. **No DEFAULT** If the operating system does not meet the Plug and Play specifications, this option allows the BIOS to configure all the devices in the system.

- **Yes** **This setting allows the operating system to change the interrupt, I/O, and DMA settings. Set this option if the system is running Plug and Play aware operating systems.**

- **PCI Latency Timer [64]**

Use the **PCI Latency Timer** option to specify the PCI latency time. The latency time is measured in units of PCI clock cycles for the PCI device latency timer register. Configuration options are:

- 32
- 64 (Default)
- 96
- 128
- 160
- 192
- 224
- 248

- **Allocate IRQ to PCI VGA [Yes]**

Use the **Allocate IRQ to PCI VGA** option to restrict the system from giving the VGA adapter card an interrupt address.

- **Yes DEFAUL**T Assigns an IRQ to a PCI VGA card if card requests IRQ
- **No** **Does not assign IRQ to a PCI VGA card even if the card requests an IRQ**

- **Palette Snooping [Disabled]**

Use the **Palette Snooping** option to enable or disable the palette snooping function.

- **Disabled DEFAULT** Unless the VGA card manufacturer requires palette snooping to be enabled, this option should be disabled.

Enabled PCI devices are informed that an ISA based Graphics device is installed in the system so the ISA based Graphics card functions correctly. This does not necessarily indicate a physical ISA adapter card. The graphics chipset can be mounted on a PCI card. Always check with the adapter card manual first, before modifying the default settings in the BIOS.

PCI IDE BusMaster [Disabled]

Use the **PCI IDE BusMaster** BIOS option to enable or prevent PCI IDE busmastering.

Disabled	**DEFAULT**	Busmastering is prevented
Enabled		IDE controller on the PCI local bus has mastering capabilities

OffBoard PCI/ISA IDE Card [Auto]

Use the **OffBoard PCI/ISA IDE Card** BIOS option to select the **OffBoard PCI/ISA IDE Card**.

Auto DEFAULT The location of the Off Board PCI IDE adapter card is automatically detected by the AMIBIOS.

PCI Slot 1 PCI Slot 1 is selected as the location of the OffBoard PCI IDE adapter card. Only select this slot if the adapter card is installed in PCI Slot 1.

PCI Slot 2 PCI Slot 2 is selected as the location of the OffBoard PCI IDE adapter card. Only select this slot if the adapter card is installed in PCI Slot 2.

PCI Slot 3 PCI Slot 3 is selected as the location of the OffBoard PCI IDE adapter card. Only select this slot if the adapter card is installed in PCI Slot 3.

PCI Slot 4 PCI Slot 4 is selected as the location of the OffBoard PCI IDE adapter card. Only select this slot if the adapter card is installed in PCI Slot 4.

PCI Slot 5 PCI Slot 5 is selected as the location of the OffBoard PCI IDE adapter card. Only select this slot if the adapter card is installed in PCI Slot 5.

PCI Slot 6 PCI Slot 6 is selected as the location of the OffBoard PCI IDE adapter card. Only select this slot if the adapter card is installed in PCI Slot 6.

IRQ# [Available]

Use the **IRQ#** address to specify what IRQs can be assigned to a particular peripheral device.

- **Available DEFAULT** The specified IRQ is available to be used by PCI/PnP devices
- **Reserved** The specified IRQ is reserved for use by Legacy ISA devices

Available IRQ addresses are:

- IRQ3
- IRQ4
- IRQ5
- IRQ7
- IRQ9
- IRQ10
- IRQ 11
- IRQ 14
- IRQ 15

- **DMA Channel# [Available]**

  Use the **DMA Channel#** option to assign a specific DMA channel to a particular PCI/PnP device.

  - **Available DEFAULT** The specified DMA is available to be used by PCI/PnP devices
  - **Reserved** The specified DMA is reserved for use by Legacy ISA devices

  Available DMA Channels are:

  - DM Channel 0
  - DM Channel 1
  - DM Channel 3
  - DM Channel 5
  - DM Channel 6
  - DM Channel 7

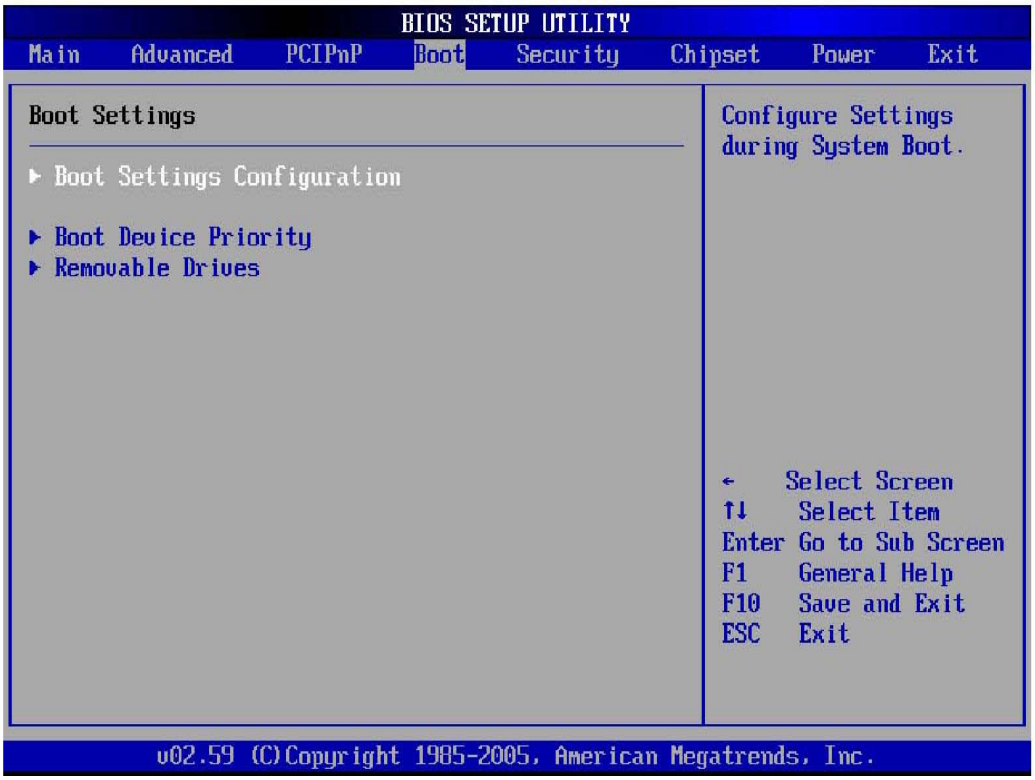
- **Reserved Memory Size [Disabled]**

  Use the **Reserved Memory Size** BIOS option to specify the amount of memory that should be reserved for legacy ISA devices.

Disabled DEFAULT No memory block reserved for legacy ISA devices **16K** 16KB reserved for legacy ISA devices **32K** 32KB reserved for legacy ISA devices **64K** 54KB reserved for legacy ISA devices

4.5 Boot

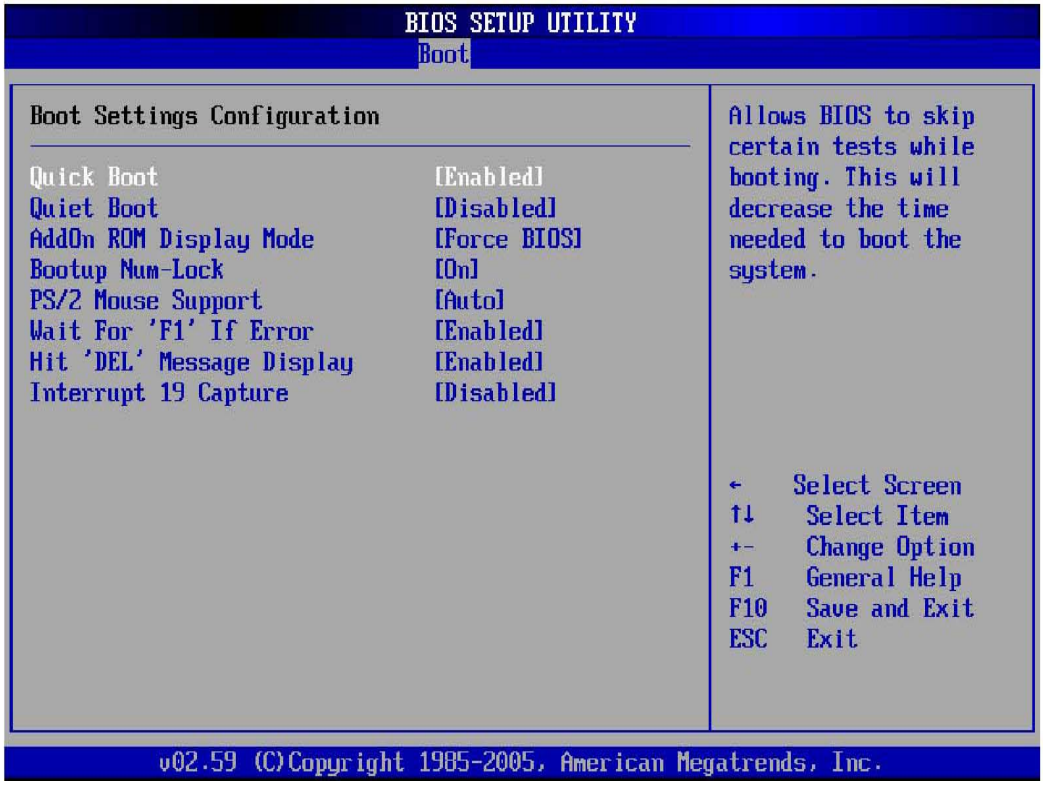
Use the **Boot** menu (**BIOS Menu 17**) to configure system boot options.



BIOS Menu 17: Boot

4.5.1 Boot Settings Configuration

Use the **Boot Settings Configuration** menu (**BIOS Menu 18**) to configure advanced system boot options.


BIOS SETUP UTILITY
Boot
Boot Settings Configuration
Quick Boot [Enabled]
Quiet Boot [Disabled]
AddOn ROM Display Mode [Force BIOS]
Bootup Num-Lock [On]
PS/2 Mouse Support [Auto]
Wait For 'F1' If Error [Enabled]
Hit 'DEL' Message Display [Enabled]
Interrupt 19 Capture [Disabled]
Allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.
← Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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BIOS Menu 18: Boot Settings Configuration

. **Quick Boot [Enabled]** Use the **Quick Boot** BIOS option to make the computer speed up the boot process.

Disabled No POST procedures are skipped **Enabled DEFAULT** Some POST procedures are skipped to decrease the system boot time

. **Quiet Boot [Disabled]** Use the **Quiet Boot** BIOS option to select the screen display when the system boots.

Disabled DEFAULT Normal POST messages displayed **Enabled** OEM Logo displayed instead of POST messages

. **AddOn ROM Display Mode [Force BIOS]**

Use the **AddOn ROM Display Mode** option to allow add-on ROM (read-only memory) messages to be displayed.

. **Force BIOS**	**DEFAULT**	The system forces third party BIOS to display

	during system boot.
. **Keep Current**	The system displays normal information during system boot.

. **Bootup Num-Lock [On]**

Use the **Bootup Num-Lock** BIOS option to specify if the number lock setting must be modified during boot up.

. **Off**	**Does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard lights up when the Number Lock is engaged.**
. **On DEFAULT**	Allows the Number Lock on the keyboard to be enabled automatically when the computer system boots up. This allows the immediate use of the 10-key numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard is lit.

. **PS/2 Mouse Support [Auto]**

Use the **PS/2 Mouse Support** option adjusts PS/2 mouse support capabilities.

. **Disabled**	PS/2 mouse support is disabled and prevented from using system resources.
. **Enabled**	Allows the system to use a PS/2 mouse.
. **Auto DEFAUL**T	Allows the system to automatically detect if a PS/2 mouse is being used.

. **Wait For 'F1' If Error [Enabled]**

Use the **Wait For 'F1' if Error** option to specify how the system responds when the system detects an error on boot up.

. **Disabled**	If there is an error when booting up, the system does not wait for user intervention but continues to boot up in the operating system. Only use this setting if there is a known reason for a BIOS error to appear. An example would be a system administrator must remote boot the system. The computer system does not have a keyboard currently

attached.

- **Enabled DEFAULT** If there is an error during boot up, the system waits for a user to press "F1" and enter the BIOS to rectify the problem. The BIOS can then be adjusted to the correct settings.

- **Hit 'DEL' Message Display [Enable]**

Use the **Hit "DEL" Message Display** option to specify whether the instruction to hit the delete button to enter BIOS during POST appears or not.

- **Disabled** No message displayed during POST

- **Enabled DEFAULT** Displays "**Press DEL to run Setup**" message in POST

- **Interrupt 19 Capture [Disabled]**

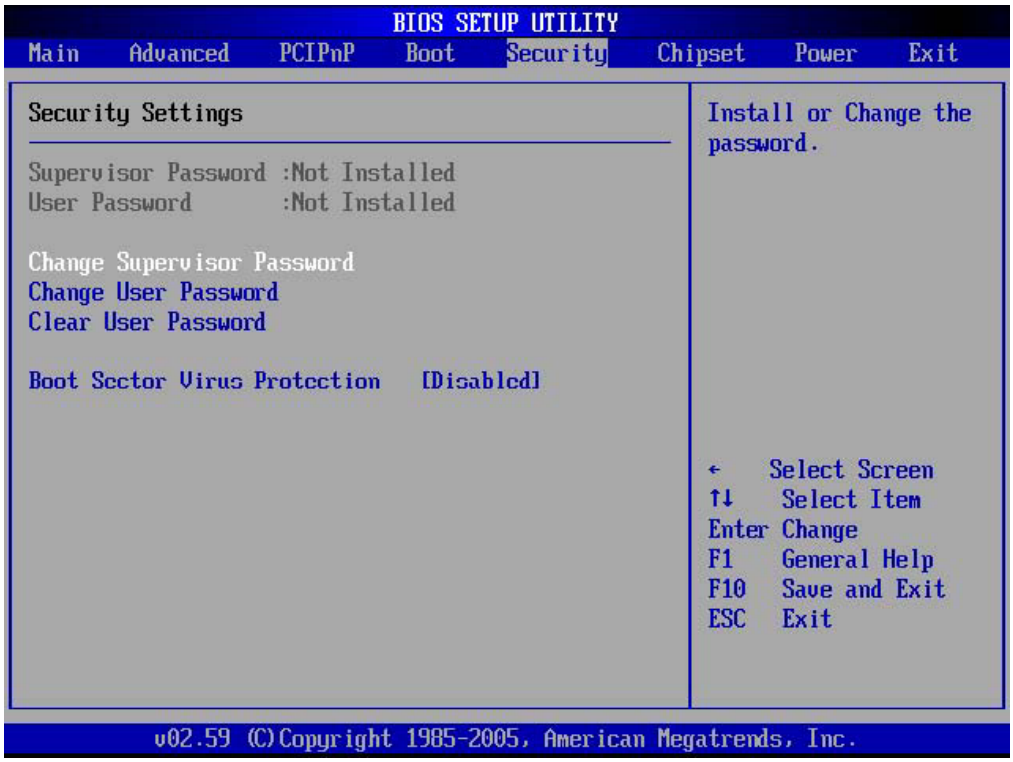
Use the **Interrupt 19 Capture** option to allow optional ROMs such as network controllers to trap BIOS interrupt 19.

- **Disabled DEFAULT** Does not allow optional ROM to trap interrupt 19 - **Enabled** Allows optional

ROM to trap interrupt 19

4.6 Security

Use the **Security** menu (**BIOS Menu 19**) to set system and user passwords.



BIOS Menu 19: Security

- **Change Supervisor Password**

  Use the **Change Supervisor Password** to set or change a supervisor password. The default for this option is **Not Installed**. If a supervisor password must be installed, select this field and enter the password. After the password has been added, **Install** appears next to **Change Supervisor Password**.

- **Change User Password**

  Use the **Change User Password** to set or change a user password. The default for this option is **Not Installed**. If a user password must be installed, select this field and enter the password. After the password has been added, **Install** appears next to **Change User Password.**

- **Clear User Password**

  Use the **Clear User Password** to clear a user password.

- **Boot Sector Virus Protection [Disabled]**

  - **Disabled DEFAULT** Disables the boot sector virus protection

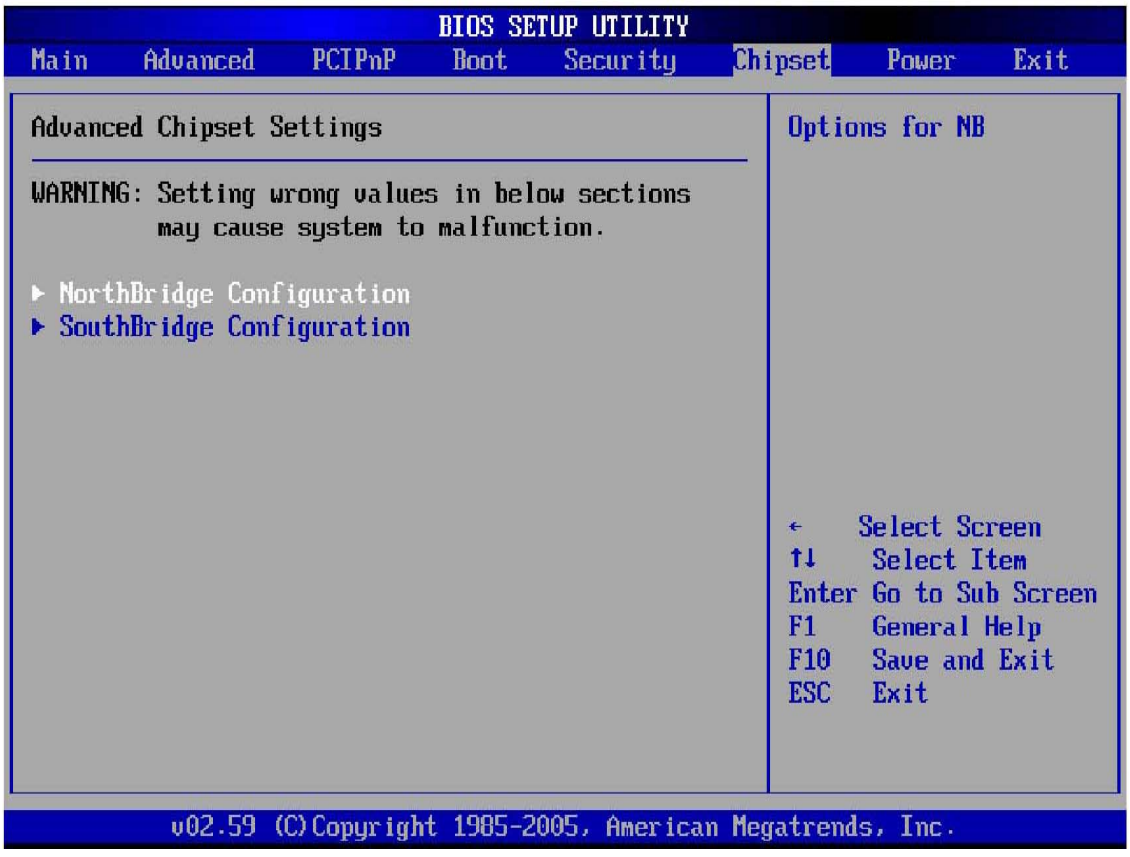
˙ **Enabled** Enables the boot sector virus protection

4.7 Chipset

Use the **Chipset** menu (**BIOS Menu 20**) to access the NorthBridge and SouthBridge configuration menus

WARNING!

Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.


BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Power Exit
Advanced Chipset Settings
WARNING: Setting wrong values in below sections
may cause system to malfunction.
▶ NorthBridge Configuration
▶ SouthBridge Configuration
Options for NB
← Select Screen
↑↓ Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
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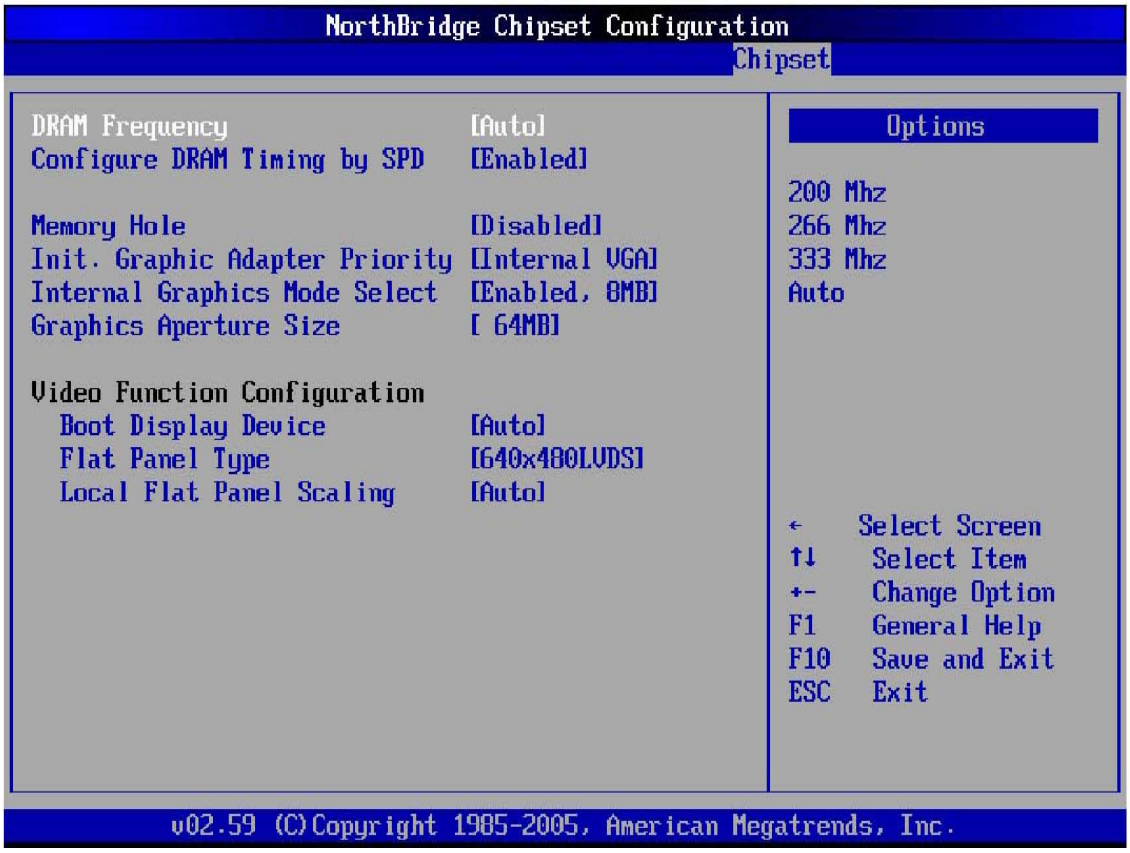
BIOS Menu 20: Chipset

4.7.1 NorthBridge Configuration

Use the **NorthBridge Configuration** menu (**BIOS Menu 21**) to configure the northbridge

chipset.



BIOS Menu 21:NorthBridge Chipset Configuration

. **DRAM Frequency [Auto]**

Use the **DRAM Frequency** option to specify the DRAM frequency or allow the system to automatically detect the DRAM frequency.

. **200MHz**		Sets the DRAM frequency to 200MHz
. **266MHz**		Sets the DRAM frequency to 266MHz
. **333MHz**		Sets the DRAM frequency to 333MHz
. **Auto**	**DEFAULT**	Automatically selects the DRAM frequency

. **Configure DRAM Timing by SPD [Enabled]**

Use the **Configure DRAM Timing by SPD** option to determine if the system uses the SPD (Serial Presence Detect) EEPROM to configure the DRAM timing. The SPD EEPROM contains all necessary DIMM specifications including the speed of the individual components such as CAS and bank cycle time as well as valid settings for the module and the manufacturer's code. The SPD enables the BIOS to read the spec sheet of the DIMMs on boot-up and then adjust the memory timing parameters accordingly.

- **Disabled** DRAM timing parameters are manually set using the DRAM sub-items
- **Enabled DEFAULT** DRAM timing parameter are set according to the DRAM Serial Presence Detect (SPD)

If the **Configure DRAM Timing by SPD** option is disabled, the following configuration options appear.

. DRAM CAS# Latency [3]
. DRAM RAS# to CAS# Delay [5 DRAM Clocks]
. DRAM RAS# Precharge [5 DRAM Clocks]
. DRAM RAS# Activate to Precha [15 DRAM Clocks]

. **Memory Hole [Disabled]**

Use the **Memory Hole** option to reserve memory space between 15MB and 16MB for ISA expansion cards that require a specified area of memory to work properly. If an older ISA expansion card is used, please refer to the documentation that came with the card to see if it is necessary to reserve the space.

- **Disabled DEFAUL**T Memory is not reserved for ISA expansion cards
- **15MB – 16M**B Between 15MB and 16MB of memory is reserved for ISA expansion cards

. **Init. Graphic Adapter Priority [Internal VGA]**

The **Init. Graphic Adapter Priority** option selects the graphics controller the system uses as a primary boot device. The options are:

. Internal VGA
. PCI/Int-VGA

. **Internal Graphics Mode Select [Enable, 8MB]**

Use the **Internal Graphic Mode Select** option to specify the amount of system memory that can be used by the Internal graphics device.

. **Disable**	
. **Enable, 1MB**	1MB of memory used by internal graphics device
. **Enable, 4MB**	4MB of memory used by internal graphics device
. **Enable, 8MB DEFAULT**	8MB of memory used by internal graphics device
. **Enable, 16MB**	16MB of memory used by internal graphics device
. **Enable, 32MB**	32MB of memory used by internal graphics device

. **Graphics Aperture Size [64MB]**

The **Graphics Aperture Size** option selects the size of the AGP aperture. The aperture is a portion of the PCI memory address range dedicated as graphics memory address space.

. **64MB DEFAULT** Graphics aperture size set as 64MB

. **128MB** Graphics aperture size set as 128MB

. **256MB** Graphics aperture size set as 256MB

. **Boot Display Device [Auto]**

The **Boot Display Device** BIOS option selects the display device the system uses when it boots. The available options are listed below:

. Auto (Default)

- CRT on Port 0
- LFP on Port 2
- LFP on Port 3
- DFP on Port 2
- DFP on Port 3
- TV on Port 2
- TV on Port 3
- CRT-Port 0 & CRT-Port 2
- CRT-Port 0 & CRT-Port 3
- CRT-Port 0 & LFP-Port 2
- CRT-Port 0 & LFP-Port 3
- CRT-Port 0 & DFP-Port 2
- CRT-Port 0 & DFP-Port 3
- DFP-Port 2 & DFP-Port 3

- **Flat Panel Type [640x480 18bit LVDS]**

  The **Flat Panel Type** BIOS option specifies the flat panel PC type being used.

NOTE:

Please refer to the technical documents that came with the flat panel PC to ensure the correct settings are selected.

The following options are available:

- 640x480 LVDS (Default)
- 800x600 LVDS
- 1024x768 24bit LVDS
- 1280x1024 LVDS
- 1024x768 18 bit LVDS
- 1600x1200 LVDS
- 800x600 24bit LVDS
- 800x600 18bit LVDS
- 1024x768 36bit LVDS
- Type 12
- Type 13
- Type 14

. Type 15
. Type 16

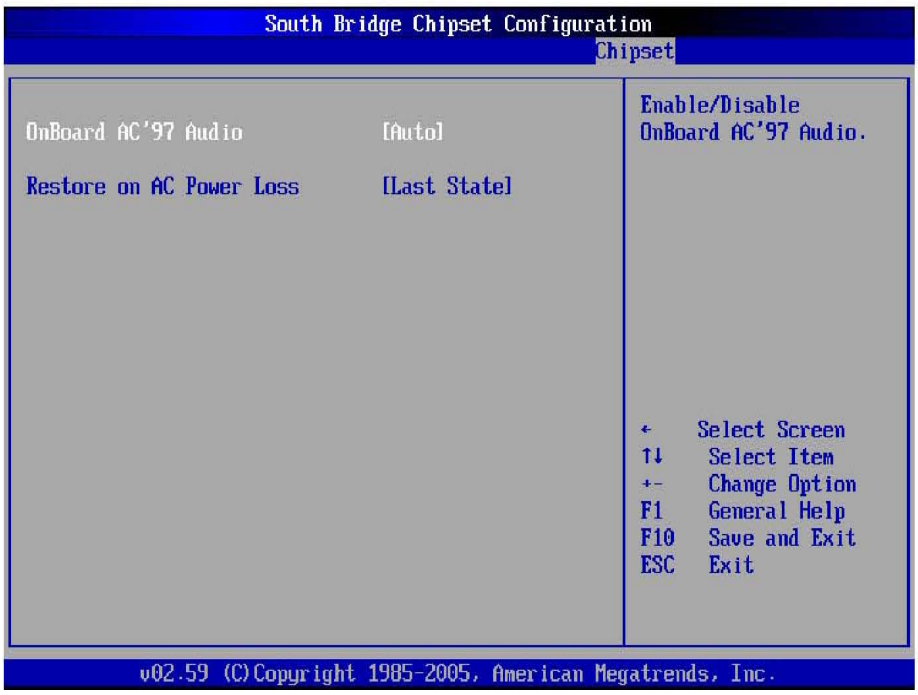
. **Local Flat Panel Scaling [Auto]**

The **Local Flat Panel Scaling** option selects the mode of the local flat panel scaling.

. **Auto DEFAULT. Forced Scaling Disabled**	Automatically scale the connected panel. The connected local flat panel is forceDisable the local flat panel scaling.	local flat d to scale.

5.7.2 SouthBridge Configuration

The **SouthBridge Intel ICH4 Configuration** menu (**BIOS Menu 22**) the southbridge chipset to be configured.



BIOS Menu 22:SouthBridge Chipset Configuration

. **OnBoard AC97 Audio DEVICE**

The **OnBoard AC97 Audio DEVICE** option enables or disables the AC'97 CODEC.

- **Auto DEFAULT** The onboard AC'97 automatically detected and enabled
- **Disabled** The onboard AC'97 is disabled

- **Restore on AC Power Loss [Last State]**

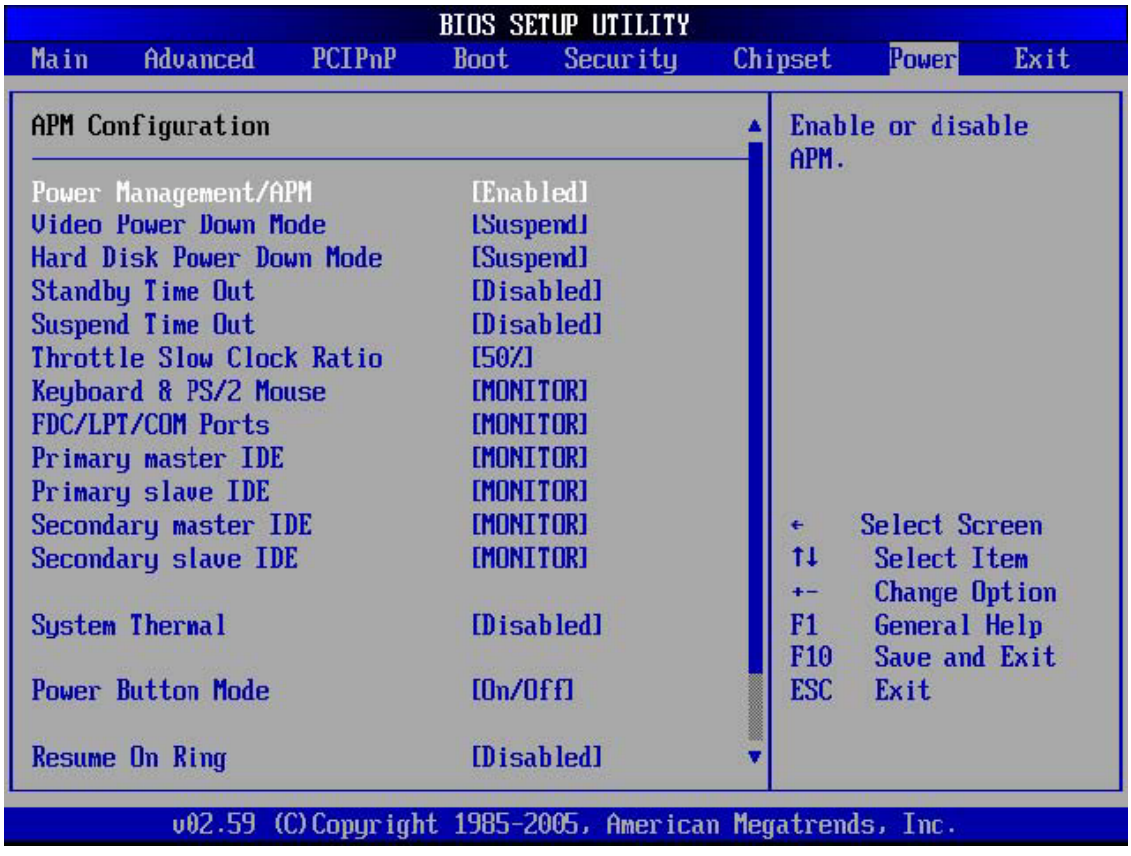
The Restore on AC Power Loss BIOS option specifies what state the system returns to if there is a sudden loss of power to the system.

- **Power Off** The system remains turned off
- **Power On** The system turns on
- **Last State**

DEFAULT The system returns to its previous state. If it was on, it turns itself on. If it was off, it remains off.

4.8 Power Key

The **Power** menu (**BIOS Menu 23**) allows the advanced power management options to be configured.


BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Power Exit
APM Configuration
Power Management/APM [Enabled]
Video Power Down Mode [Suspend]
Hard Disk Power Down Mode [Suspend]
Standby Time Out [Disabled]
Suspend Time Out [Disabled]
Throttle Slow Clock Ratio [50%]
Keyboard & PS/2 Mouse [MONITOR]
FDC/LPT/COM Ports [MONITOR]
Primary master IDE [MONITOR]
Primary slave IDE [MONITOR]
Secondary master IDE [MONITOR]
Secondary slave IDE [MONITOR]
System Thermal [Disabled]
Power Button Mode [On/Off]
Resume On Ring [Disabled]
Enable or disable APM.
← Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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BIOS Menu 23:Power

- **Power Management/APM [Enabled]**

The **Power Management/APM** BIOS option allows access to the advanced power management features. If this option is disabled, the only other option on the screen is the "**Resume On RTC Alarm**."

. **Disabled**	Disables the Advanced Power Management (APM) feature	
. **Enabled**	**DEFAULT**	Enables the APM feature

- **Video Power Down Mode [Suspend]**

The **Video Power Down Mode** BIOS option specifies in what system mode the video device can be turned off.

. **Disabled**		The Video cannot be turned off in the Suspend or Standby mode
. **Standby**		The video can be turned off in the Standby mode
. **Suspend**	**DEFAULT**	The video can be turned off in the Suspend mode

- **Hard Disk Power Down Mode [Suspend]**

The **Hard Disk Power Down Mode** BIOS specifies in what system mode the hard disk device can be turned off.

- **Disable**d The hard disk cannot be turned off in the Suspend or Standby mode
- **Standb**y The hard disk can be turned off in the Standby mode
- **Suspend DEFAUL**T The hard disk can be turned off in the Suspend mode

- **Standby Time Out [Disabled]**

The **Power Management/APM** option must be enabled in order to change this configuration option. The **Standby Time Out** option specifies what length of time without activity on certain components will place those components in a standby state. The options are:

- Disabled (Default)
- 1 Min
- 2 Min
- 4 Min
- 8 Min
- 10 Min
- 20 Min
- 30 Min
- 40 Min
- 50 Min
- 60 Min

- **Suspend Time Out [Disabled]**

The **Power Management/APM** option must be enabled in order to change this configuration option. The **Suspend Time Out** option specifies what length of time without activity on certain components will place those components in a suspended state. The options are:

- Disabled (Default)
- 1 Min
- 2 Min
- 4 Min
- 8 Min
- 10 Min
- 20 Min
- 30 Min
- 40 Min
- 50 Min
- 60 Min

- **Throttle Slow Clock Ratio [50%]**

The **Power Management/APM** option must be enabled in order to change this configuration option. The **Throttle Slow Clock Ratio** option allows the BIOS to throttle the CPU clock to reduce power consumption. For example, a throttle ratio of 50% means the BIOS throttles back the CPU clock to operate at 50% of its normal operational time.

Throttle slow clock ratio options are:

- 87.5%
- 75%
- 62.5%
- 50% (default)
- 37.5%
- 25%
- 12.5%

- **Keyboard & PS/2 Mouse [MONITOR]**

The **Power Management/APM** option must be enabled in order to change this configuration option. The **keyboard & PS/2 mouse** option enables monitoring of activity on the keyboard and PS/2 mouse ports and rouses the system from a sleep or suspend state.

- **Ignore**		The system does not monitor the keyboard and PS/2 mouse ports and does not rouse the system from a sleep or suspend state when an IRQ is detected.
- **Monitor**	**DEFAULT**	The system monitors the keyboard and PS/2 mouse ports and rouses the system from a sleep or suspend state when an IRQ is detected.

- **FDC/LPT/COM Ports [MONITOR]**

The **Power Management/APM** option must be enabled in order to change this configuration option. The **FDC/LPT/COM Ports** option enables monitoring of activity on the FDC/LPT/COM ports and rouses the system from a sleep or suspend state.

- **Ignore**	The system does not monitor the FDC/LPT/COM ports and does not rouse the system from a sleep or suspend state when an IRQ is detected.

- **Monitor DEFAULT** The system monitors the FDC/LPT/COM ports and rouses the system from a sleep or suspend state when an IRQ is detected.

Primary master IDE [MONITOR]

The **Power Management/APM** option must be enabled in order to change this configuration option. The **Primary Master IDE** option enables monitoring of activity of the primary master IDE device and rouses the system from a sleep or suspend state.

- **Ignore** The system does not monitor the primary master IDE device and does not rouse the system from a sleep or suspend state when an IRQ is detected.
- **Monitor DEFAULT** The system monitors the primary master IDE device and rouses the system from a sleep or suspend state when an IRQ is detected.

- **Primary slave IDE [MONITOR]**

The **Power Management/APM** option must be enabled in order to change this configuration option. The **Primary Slave IDE** option enables monitoring of activity of the primary slave IDE device and rouses the system from a sleep or suspend state.

- **Ignore** The system does not monitor the primary slave IDE device and does not rouse the system from a sleep or suspend state when an IRQ is detected.
- **Monitor DEFAULT** The system monitors the primary slave IDE device and rouses the system from a sleep or suspend state when an IRQ is detected.

- **Secondary master IDE [MONITOR]**

The **Power Management/APM** option must be enabled in order to change this configuration option. The **Secondary Master IDE** option enables monitoring of activity of the secondary master IDE device and rouses the system from a sleep or suspend state.

- **Ignore** The system does not monitor the secondary master IDE device and does not rouse the system from a sleep or suspend state when an IRQ is detected.

- **Monitor DEFAULT** The system monitors the secondary master IDE device and rouses the system from a sleep or suspend state when an IRQ is detected.

- **Secondary slave IDE [MONITOR]**

The **Power Management/APM** option must be enabled in order to change this configuration option. The **Secondary Slave IDE** option enables monitoring of activity of the secondary slave IDE device and rouses the system from a sleep or suspend state.

- **Ignore DEFAULT** The system does not monitor the secondary slave IDE device and does not rouse the system from a sleep or suspend state when an IRQ is detected.
- **Monitor** The system monitors the secondary slave IDE device and rouses the system from a sleep or suspend state when an IRQ is detected.

- **System Thermal [Disabled]**

The **System Thermal** BIOS option enables the manual setting of the **Thermal Active Temperature** and the **THRM throttle Ratio** BIOS options.

- **Disabled DEFAULT** **Thermal Active Temperature** and the **THRM throttle Ratio** BIOS options cannot be set manually.
- **Enabled** **Thermal Active Temperature** and the **THRM throttle Ratio** BIOS options can be set manually.

- **Power Button Mode [On/Off]**

The **Power Button Mode** BIOS specifies how the power button functions.

- **On/Off**	**DEFAULT**	When the power button is pressed the system is either turned on or off
- **Suspend**		When the power button is pressed the system goes into suspend mode

. **Resume on Ring [Disabled]** The **Resume on Ring** BIOS option specifies if the system will be roused from a suspended or standby state when there is activity on the RI (ring in) modem line. That is,

the system will be roused by an incoming call on a modem. **Disabled DEFAULT** Wake event not generated by an incoming call **Enabled** Wake event generated by an incoming call

. **Resume on Lan [Disabled]** The **Resume on Lan** BIOS option specifies if the system is roused from a suspended or

standby state when there is activity on the LAN. **Disabled DEFAULT** Wake event not generated by LAN activity **Enabled** Wake event generated by LAN activity

. **Resume on PME# [Disabled]** The **Resume on PME#** BIOS option specifies if the system will be roused from a suspended or standby state when there is activity on the PCI PME (power management event) controller. **Disabled DEFAULT** Wake event not generated by PCI PME controller activity **Enabled** Wake event generated by PCI PME controller activity

. **Resume On RTC Alarm [Disabled]**

The **Resume On RTC Alarm** determines when the computer is roused from a suspended state.

- **Disabled DEFAULT** The real time clock (RTC) cannot generate a wake event
- **Enabled** If selected, the following appears with values that can be selected:

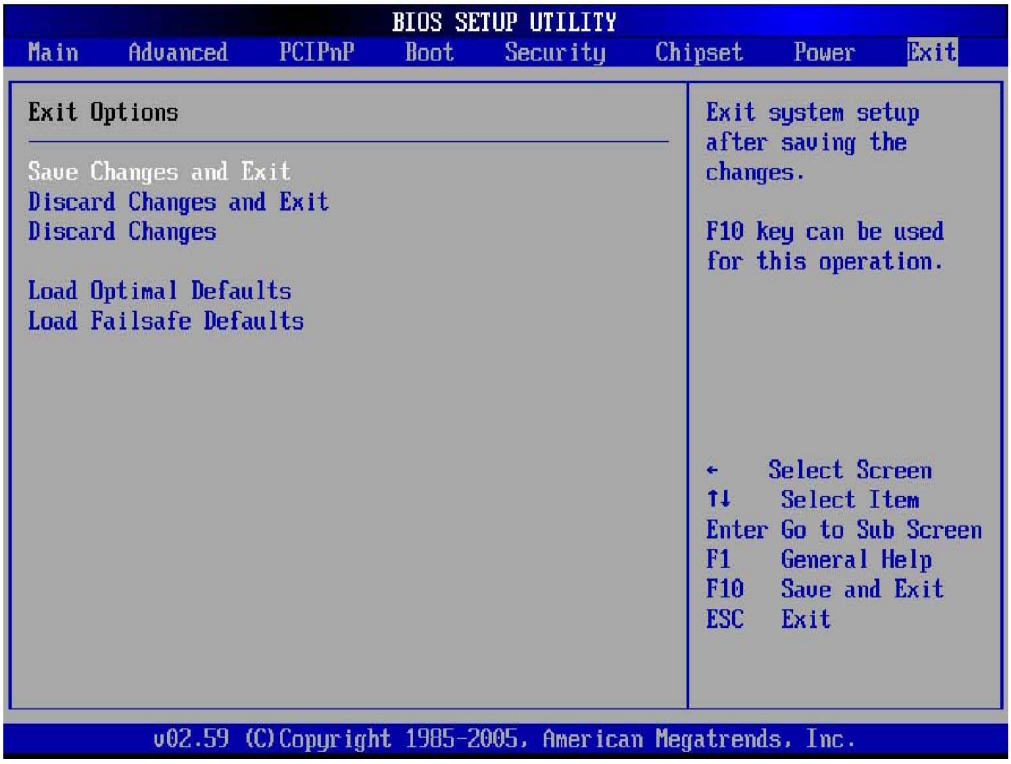
  . **RTC Alarm Date (Days)**

  . **System Time**

  After setting the alarm, the computer turns itself on from a suspend state when the alarm goes off.

4.9 Exit

The **Exit** menu (**BIOS Menu 24**) loads default BIOS values, optimal failsafe values and to save configuration changes.


BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Power Exit
Exit Options
Save Changes and Exit
Discard Changes and Exit
Discard Changes
Load Optimal Defaults
Load Failsafe Defaults
Exit system setup after saving the changes.
F10 key can be used for this operation.
← Select Screen
↑↓ Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
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BIOS Menu 24:Exit

- **Save Changes and Exit**

  If configuration changes are complete, select this option to save them and exit the BIOS menus.

- **Discard Changes and Exit**

  If configuration changes are complete but do need to be saved, select this option to exit the BIOS menus.

- **Discard Changes**

  If configuration changes are complete but do need to be saved but BIOS still needs to be run , select this option.

- **Load Optimal Defaults**

This option loads optimal default values for each of the parameters on the Setup menus.

F9 key can be used for this operation.

- **Load Failsafe Defaults**

This option loads failsafe default values for each of the parameters on the Setup menus.

Chapter 5

Software Drivers

5.1 Available Software Drivers

NOTE:

The contents of the CD may vary throughout the life cycle of the product and is subject to change without prior notice. Visit the IEI website or contact technical support for the latest updates.

The MOTHERBOARD board has five software drivers:

- Chipset
- Audio
- LAN
- VGA
- SATA

All five drivers can be found on the CD that came with the MOTHERBOARD. To install the drivers please follow the instructions in the sections below

5.2 Chipset Driver Installation

To install the chipset driver, please follow the steps below:

Step 1: Insert the TOPSCCC CD into the system setup Autorun “in figure5-2-1

Click “intel ® chipset Software installation utility”

Figure 5-2-1

Step 2: The “InstallShield Wizard Preparation Screen” in **Figure 6-1** appears.

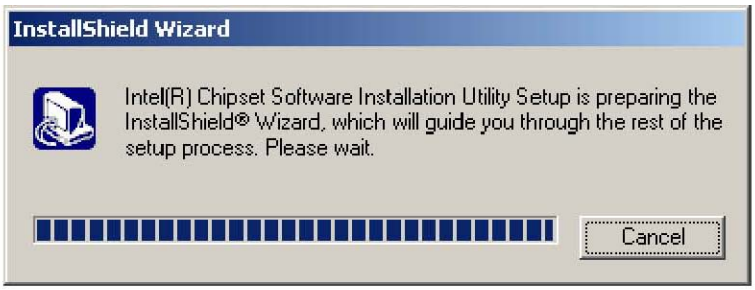

InstallShield Wizard
Intel(R) Chipset Software Installation Utility Setup is preparing the InstallShield® Wizard, which will guide you through the rest of the setup process. Please wait.
Cancel

Figure 6-1

Step 3: The “setup chipset software installation Utility” in **Figure 6-2** appears Click “ Next”

Setup
Welcome to the InstallShield(R) Wizard for Intel(R) Chipset Software Installation Utility
Welcome to the Intel(R) Chipset Software Installation Utility. This utility will enable Plug & Play INF support for Intel(R) chipset components.
< Back
Next >
Cancel

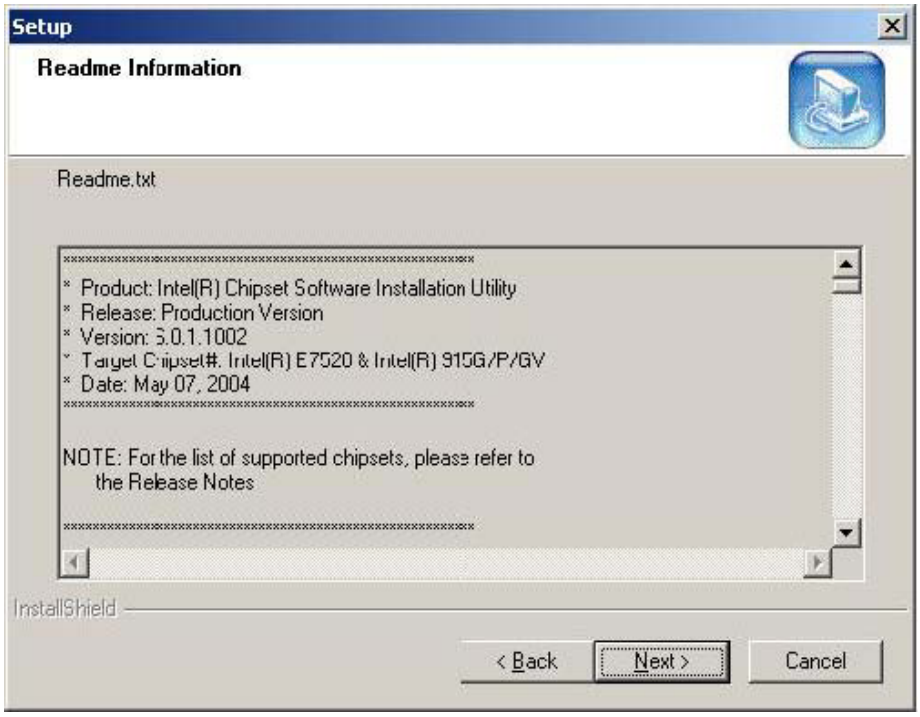
Figure 6-2: Welcome Screen

Step 4: Click “**Next**” and the license agreement shown in **Figure 6-3** appears.

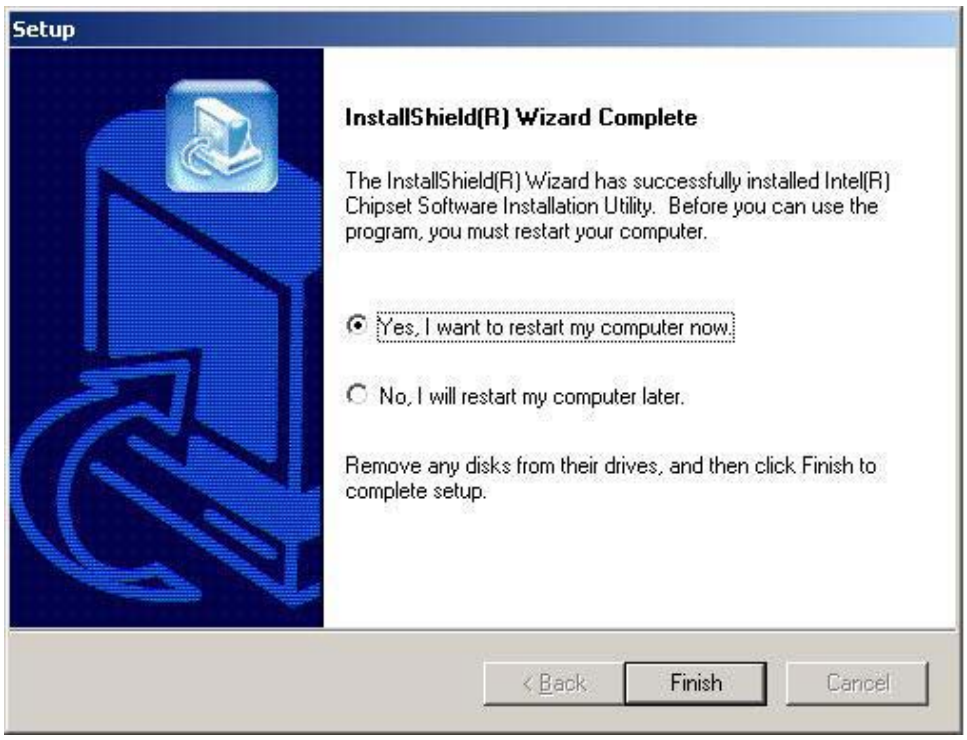
Setup
License Agreement
Please read the following license agreement carefully.
Press the PAGE DOWN key to see the rest of the agreement.
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor
Do you accept all the terms of the preceding License Agreement? If you choose No, the setup will close. To install Intel(R) Chipset Software Installation Utility, you must accept this agreement.
InstallShield
< Back
Yes
No

Figure 6-3: License Agreement

Step 5: Agree to the license terms by clicking "**Yes**". The "**Readme**" in **Figure 6-4** appears.


Setup
Readme Information
Readme.txt
* Product: Intel(R) Chipset Software Installation Utility
* Release: Production Version
* Version: 5.0.1.1002
* Target Chipset#: Intel(R) E7520 & Intel(R) 915G/P/GV
* Date: May 07, 2004
NOTE: For the list of supported chipsets, please refer to the Release Notes
InstallShield
< Back
Next >
Cancel

Step 6: Click "**Yes**". The driver is installed on the computer. After the installation is complete, the installation complete screen shown in **Figure 6-5** appears. Select the preferred option and click "**Finish**" to complete the installation process.

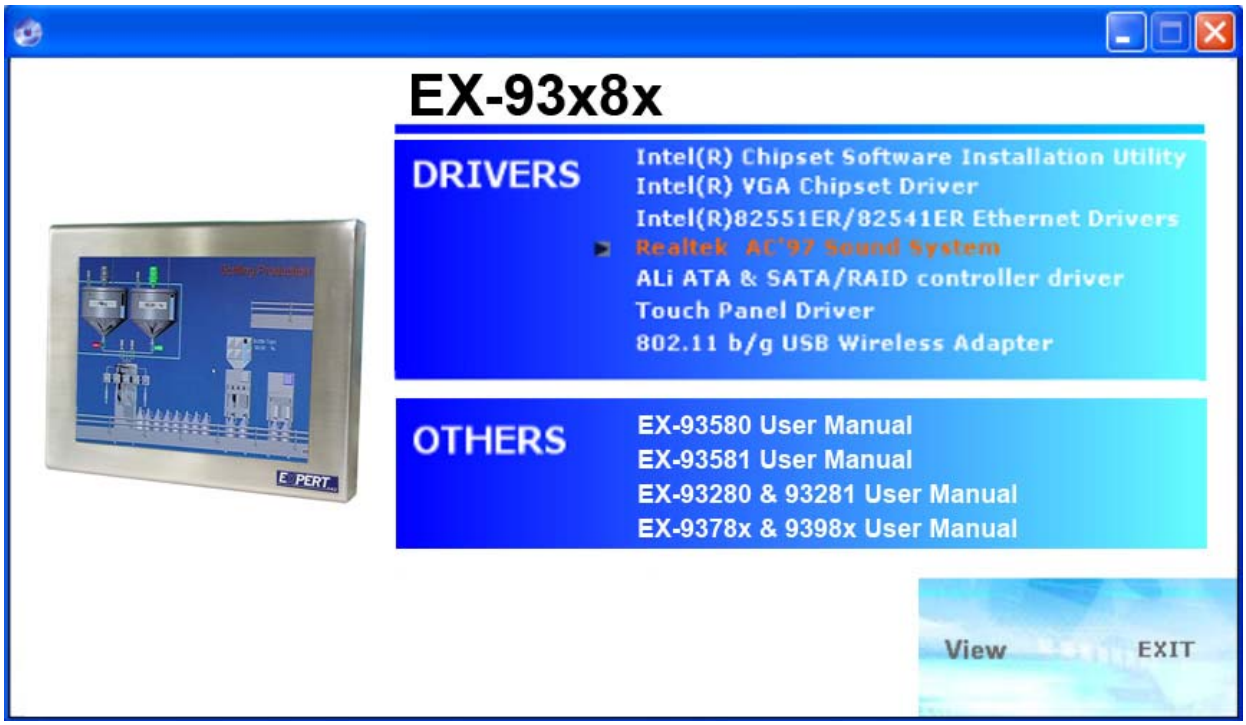

Setup
InstallShield(R) Wizard Complete
The InstallShield(R) Wizard has successfully installed Intel(R) Chipset Software Installation Utility. Before you can use the program, you must restart your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
< Back
Finish
Cancel

5.3 RealTek Audio Driver Installation

To install the RealTek AC'97 Audio driver, please follow the steps below:

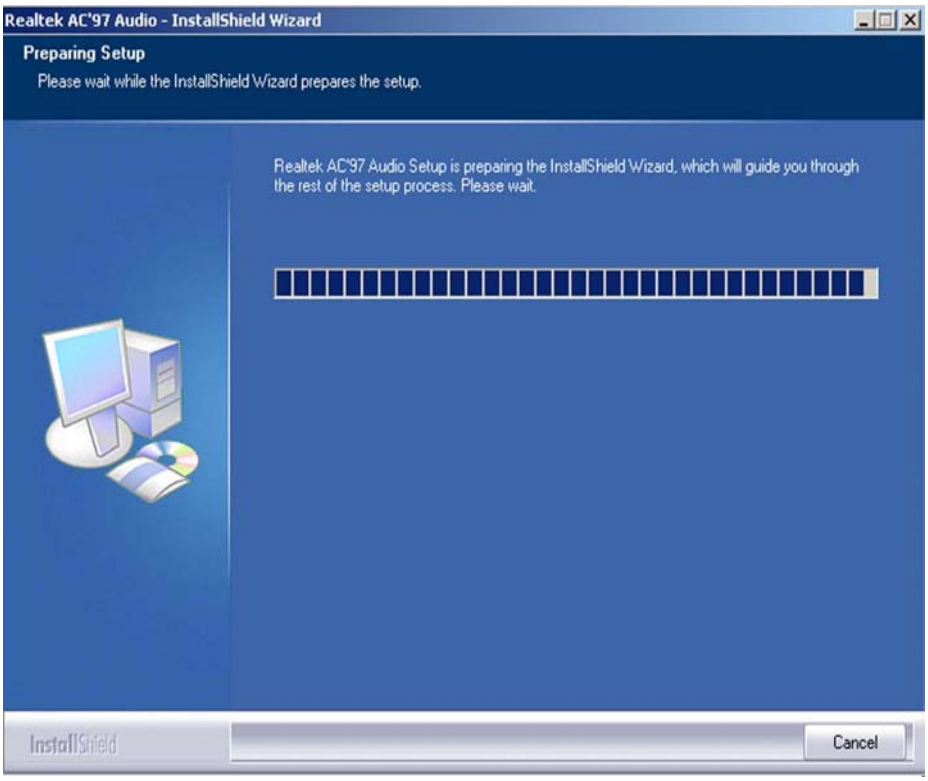
Step 1: Insert the TOPSCCC CD into the system setup Autorun "in figure

Click "Realtek AC'97 Sound System"



Step 2: Once double clicking the **Setup** icon, the install shield wizard for the audio driver starts. See **Figure 6-6.**

Step 3: The RealTek Audio Setup prepares the install shield to guide through the rest of the setup process. See **Figure 6-7**.


Realtek AC'97 Audio - InstallShield Wizard
Preparing Setup
Please wait while the InstallShield Wizard prepares the setup.
Realtek AC'97 Audio Setup is preparing the InstallShield Wizard, which will guide you through the rest of the setup process. Please wait.
InstallShield
Cancel

Step 4: After install shield is prepared, the welcome screen shown in **Figure 6-8** appears. To continue the installation process, click the "**Next**" button. The install shield starts to configure the new software as shown in **Figure 6-9**.

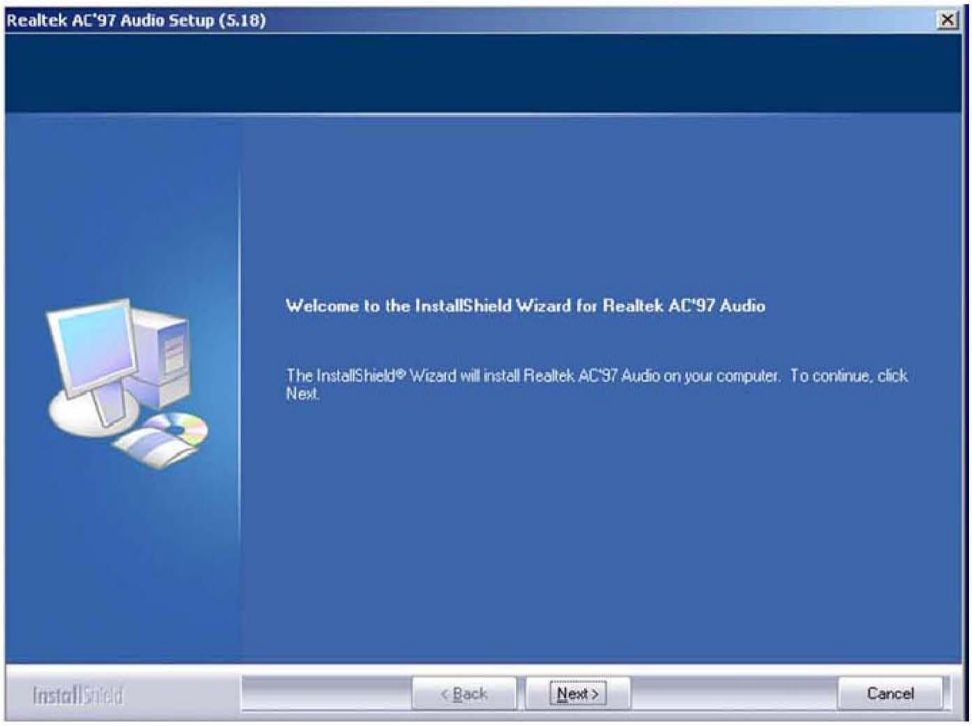
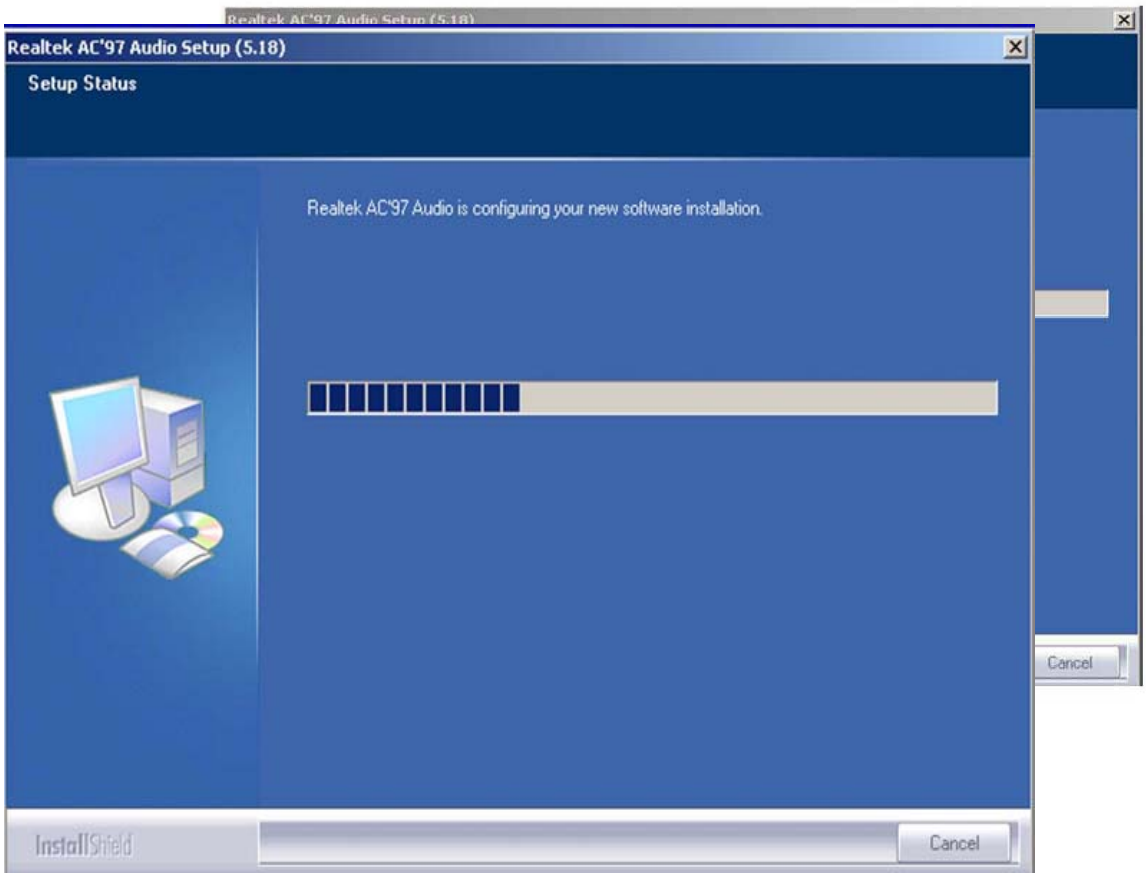

Realtek AC'97 Audio Setup (5.18)
Welcome to the InstallShield Wizard for Realtek AC'97 Audio
The InstallShield® Wizard will install Realtek AC'97 Audio on your computer. To continue, click Next.
InstallShield
< Back
Next >
Cancel

Figure 6-8: Audio Driver Welcome Screen

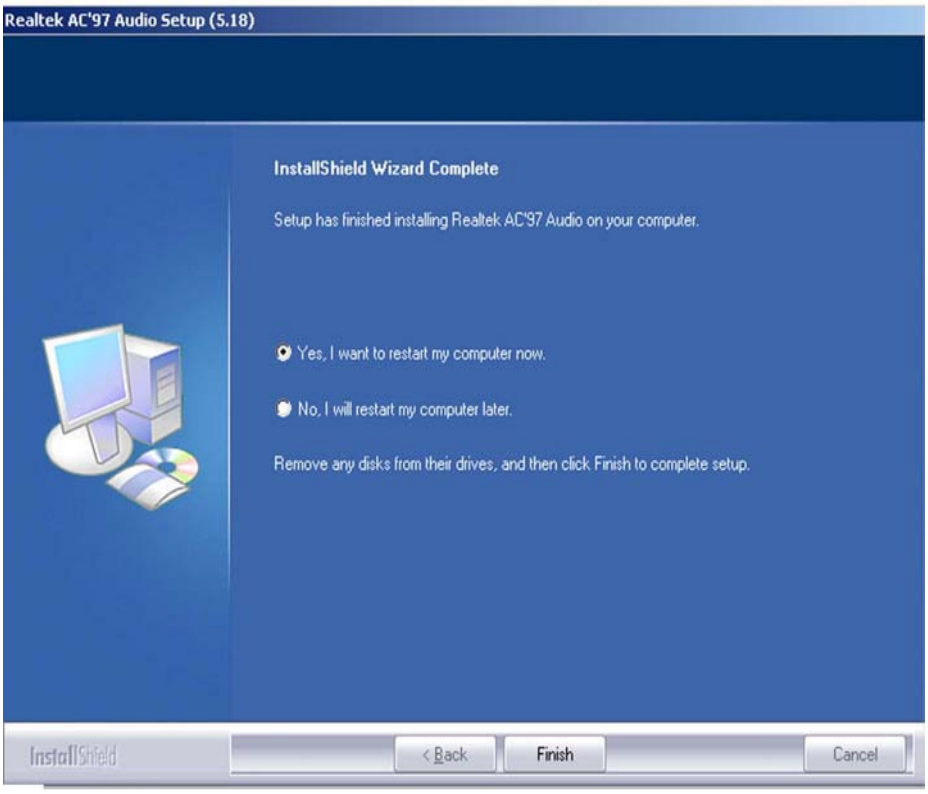
Step 5 To continue the installation process, click the "**Yes**" button. The installation notice shown below appears.

Digital Signature Not Found
The Microsoft digital signature affirms that software has been tested with Windows and that the software has not been altered since it was tested.
The software you are about to install does not contain a Microsoft digital signature. Therefore, there is no guarantee that this software works correctly with Windows.
Realtek AC'97 Audio
If you want to search for Microsoft digitally signed software, visit the Windows Update Web site at http://windowsupdate.microsoft.com to see if one is available.
Do you want to continue the installation?
Yes
No
More Info

Step 6: At this stage the clicking the "**Yes**" button in **Figure 6-10** appears, the installation of the driver begins. See **Figure 6-11**.



Step 7: After the driver installation process is complete, a confirmation screen shown in **Figure 6-12** appears


Realtek AC'97 Audio Setup (5.18)
InstallShield Wizard Complete
Setup has finished installing Realtek AC'97 Audio on your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
InstallShield
< Back
Finish
Cancel

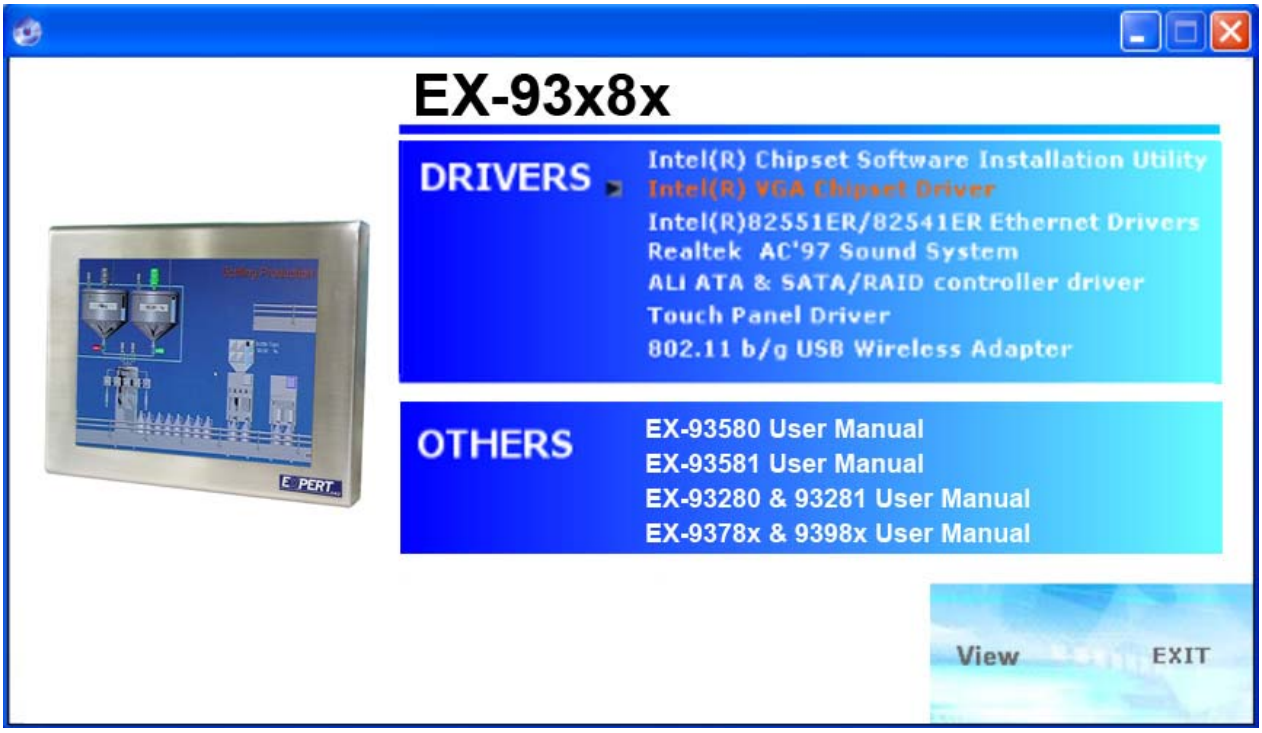
Step 8: The confirmation screen shown in **Figure 6-12** allows user to restart the computer immediately after the installation is complete or to restart the computer later. For the settings to take effect the computer must be restarted. Once decided when to restart the computer, click the "**Finish**" button.

5.4 Intel Graphics Media Accelerator Driver

To install the GMA driver, please follow the steps below:

Step 1: Insert the TOPSCCC CD into the system setup Autorun “in figure

Click “Intel® VGA Chipset driver”



Step 2: Once double clicking the Setup icon, a Welcome screen shown in **Figure 6-13** appears.

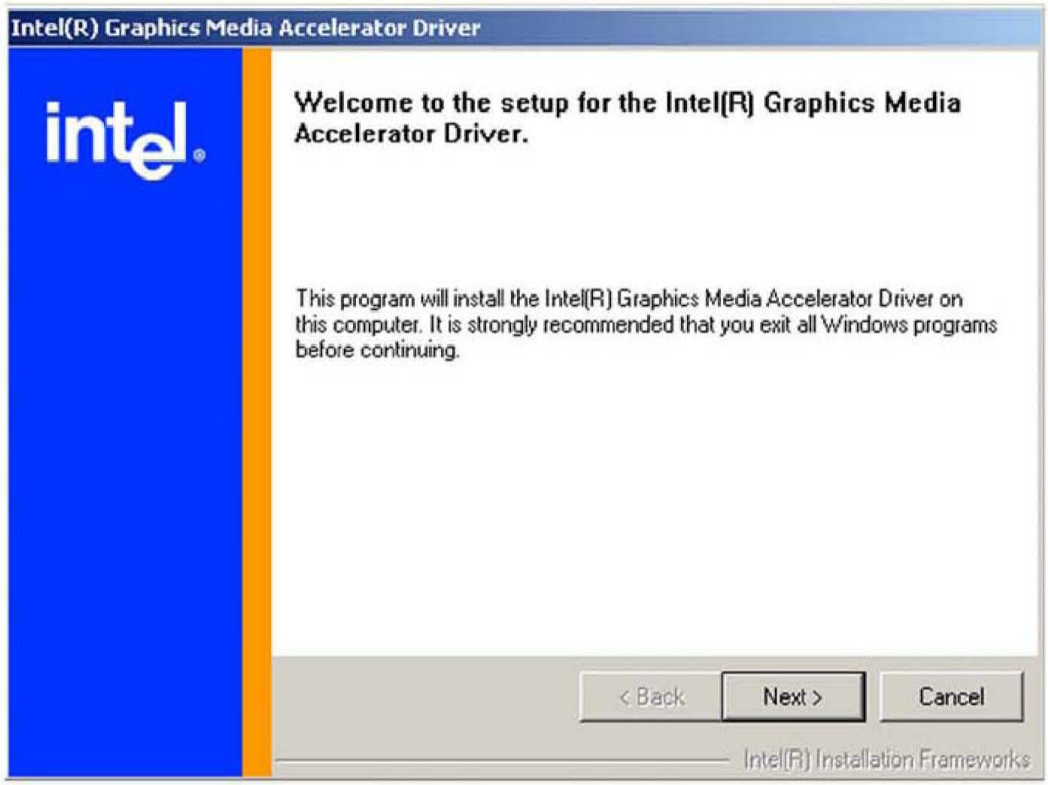

Intel(R) Graphics Media Accelerator Driver
intel
Welcome to the setup for the Intel(R) Graphics Media Accelerator Driver.
This program will install the Intel(R) Graphics Media Accelerator Driver on this computer. It is strongly recommended that you exit all Windows programs before continuing.
< Back
Next >
Cancel
Intel(R) Installation Frameworks

Figure 6-13: GMA Driver Installation Welcome Screen

Step 3: To continue installing click "**Next**" and a license agreement shown in **Figure 6-14** appears. Read through the license agreement.

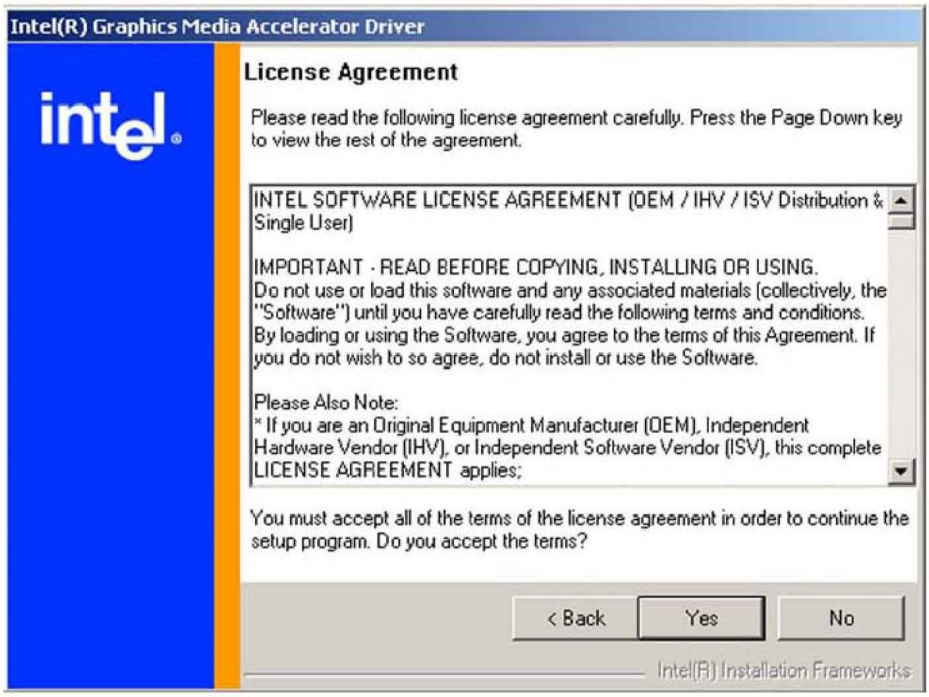
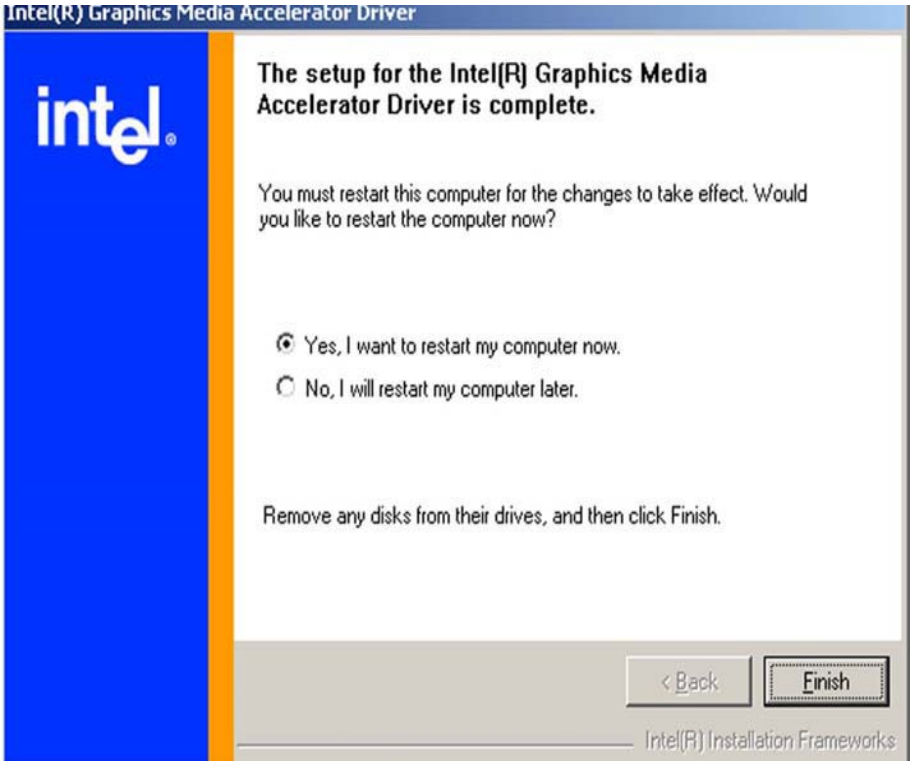

Intel(R) Graphics Media Accelerator Driver
intel
License Agreement
Please read the following license agreement carefully. Press the Page Down key to view the rest of the agreement.
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
< Back
Yes
No
Intel(R) Installation Frameworks

Figure 6-14: GMA Driver License Agreement

Step 4: Accept the terms and conditions stipulated in the license agreement by clicking the "**Yes**" button (**Figure 6-14**). The installation notice shown in **Figure 6-15** appears.

Step 5: After the driver installation process is complete, a confirmation screen shown in **Figure 6-16** appears.


Intel(R) Graphics Media Accelerator Driver
intel
The setup for the Intel(R) Graphics Media Accelerator Driver is complete.
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish.
< Back
Finish
Intel(R) Installation Frameworks

Step 6: The confirmation screen shown in **Figure 6-16** allows user to restart the computer immediately after the installation is complete or to restart the computer later. For the settings to take effect the computer must be restarted. Once decided when to restart the computer, click the "**Finish**" button.

5.5 LAN Driver Installation

To install the LAN driver, please follow the steps below:

Step 1: Insert the TOPSCCC CD into the system setup Autorun “in figure

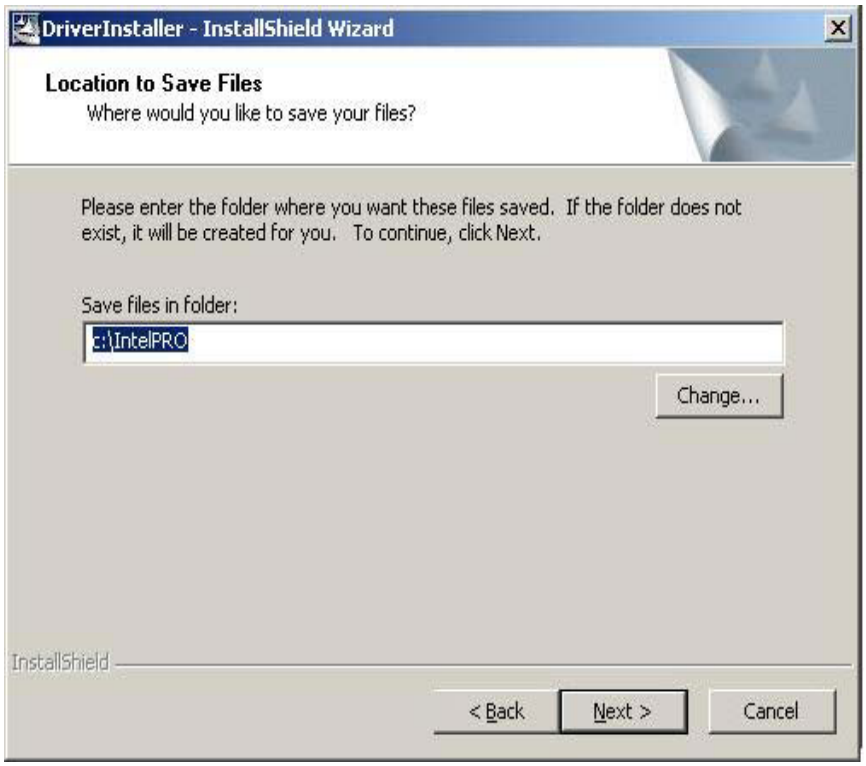
Click “intel® 8255IER Ethernet Controller Drivers”

Step 2: Once double clicked the Setup icon, a LAN License Agreement screen shown in Figure 6-17 appears.

DriverInstaller - InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
INTEL SOFTWARE LICENSE AGREEMENT
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
I accept the terms in the license agreement
I do not accept the terms in the license agreement
InstallShield
< Back
Next >
Cancel

Figure 6-17: LAN License Agreement

Step 3: Accept the License Agreement by clicking "Next." The follow-up window prompts for the directory the driver is stored in. (See Figure 6-18)


DriverInstaller - InstallShield Wizard
Location to Save Files
Where would you like to save your files?
Please enter the folder where you want these files saved. If the folder does not exist, it will be created for you. To continue, click Next.
Save files in folder:
c:\IntelPRO
Change...
InstallShield
< Back
Next >
Cancel

Step 4: After selecting the directory the driver is installed in, click "**Next**." The screen in **Figure 6-19** appears.

Step 5: In Figure 6-19, there are three options.

- Install Base Driver Installs the base driver
- Make Driver Disk Copies the driver to disk
- View Release Notes Opens word document of the release notes

5.6 SATA - ALi RAID Driver Installation

CAUTION!

Because of the inherent limitations by Intel's ICH4 chipset, the ALi M5283 SATA and RAID controller is implemented as a device that requires device driver during the Windows installation process. To successfully install the device driver, please carefully read the following instructions.

The ALi driver is especially required if SATA drives are the only hard disk drives in the MOTHERBOARD system. Otherwise, the Windows installation program may fail to locate the hard drives whether configuring the SATA disk drives into RAID volumes or using them as individual disk drives.

The system BIOS can identify SATA disk drives, but cannot control their operation. The separately installed driver therefore is necessary.

5.6.1 Installation Steps During Windows XP Installation

Step 1: Enable SATA ROM using the BIOS configuration utility. The process has been detailed in Appendix E.

Step 2: Locate the ALi installation driver folder within the Utility CD that came with the motherboard.

Step 3: Copy files under a sub-directory named "SATA50XX" (taking Windows XP installation as the example) to the root directory of floppy diskette (labeled driver diskette). The file names are listed below:

. disk1
. 5283096D.bin
. txtsetup.oem

Also copy the OS option directory “win98_me”, “win_nt”, or “win_xp”, and related driver files in each directory.

Step 4: Boot from Windows installation CD-ROM (set CD-ROM as the 1st Boot Device), when the Windows XP Setup blue screen appears and prompts users to Press F6. Please press the F6 key, if third-party SCSI or RAID driver installation is needed.

Step 5: The setup program continues, later when the setup program prompts users to specify additional adapters, please press the **S** key.

Step 6: The setup program prompts user to insert the driver diskette. Please insert the driver diskette, and press **ENTER** to continue.

Step 7: The follow-up window lists out the installation choices, please select **ALi SATA/RAID Controller** for Windows XP and press **ENTER** to continue.

Step 8: The follow-up window lists out the devices to be installed, in which selected ALi controller(s) should be included.

Step 9: Repeat step 5, but select **ALi ATA/RAID Controller** at step 7. If both controllers are installed, go to next step.

Step 10: If users want to install other devices, please operate at this time. If all devices have been successfully installed, please go to next step.

Step 11: Press **ENTER** to continue Windows XP setup.

5.6.2 Installation Steps under Existing Windows XP

After Windows XP is started, Windows system automatically finds the newly installed adapter and prompts user to install its driver. Please follow these steps to install the driver:

Step 1: When the Found New Hardware Wizard windows appear (Mass Storage Controller), select Install from a list or specify location (Advanced) and click **Next** to continue.

Step 2: In the follow-up window, please select "**Don't search, I will choose the driver to install**",

then click **Next** to continue.

Step 3: In the follow-up window, please select SCSI and RAID controllers, and then click

Next to continue.

Step 4: In the follow-up window, click **Have Disk**, then insert the driver diskette and type in the driver location: e.g., a CD-ROM, then click OK to continue.

Step 5: In the follow-up window, select **ALi SATA/RAID Controller**, then click **Next** to continue.

Step 6: Confirm the follow-up windows and click the **Finish** button to continue.

Step 7: Please "**confirm**" the Digital Signature Not Found window when it appears, when finished, please restart the computer.

Step 8: Repeat step 1, but select **ALi ATA/RAID Controller** at step 4.

Introduction

The MOTHERBOARD board comes with an onboard Realtek ALC655 CODEC. Realtek ALC655 is a 16-bit, full duplex AC'97 Rev. 2.3 compatible audio CODECwith a sampling rate of 48KHz.

D.1.1 Accessing the AC '97 CODEC

The CODEC is accessed through one 16-pin header including:

1 A LINE input shared with surround output
2 A MIC input shared with Center and LFE output
3 A LINE output
4 A MIC input line.

D.1.2 Driver Installation

The driver installation has been described in **Chapter 6**, **Section 6.3**.

After rebooting the sound effect configuration utility appears in the Windows Control Panel (see

Figure 6-20). If the peripheral speakers are properly connected, sound effects should be heard.

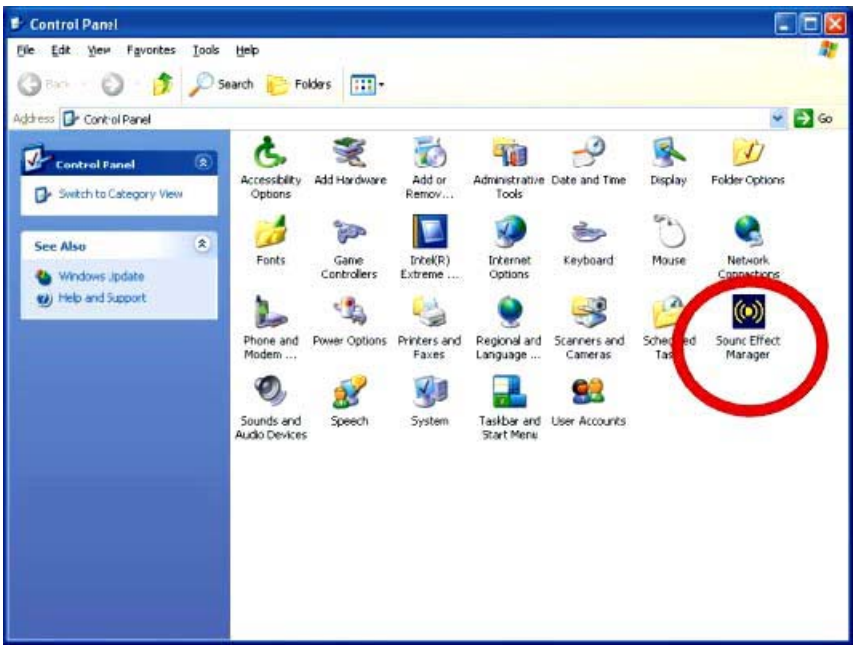


Figure 6-20: Sound Effect Manager con

D.2 Sound Effect Configuration

D.2.1 Accessing the Sound Effects Manager

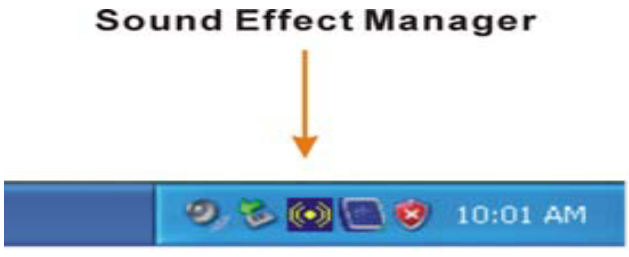
To access the **Sound Effects Manager**, please do the following:

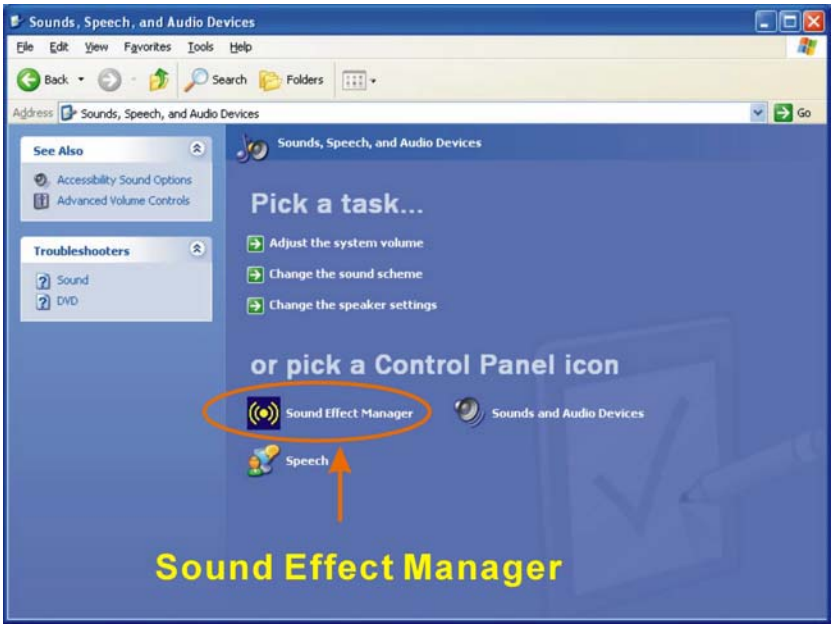
Step 9: Install the audio CODEC driver.

Step 10: Click either:

. The **Sound Effect Manager** icon in the **Notification Area** of the system task bar (see **Figure 6-21**), or

. The **Sound Effect Manager** icon in the Control Panel (**Figure 6-22**).





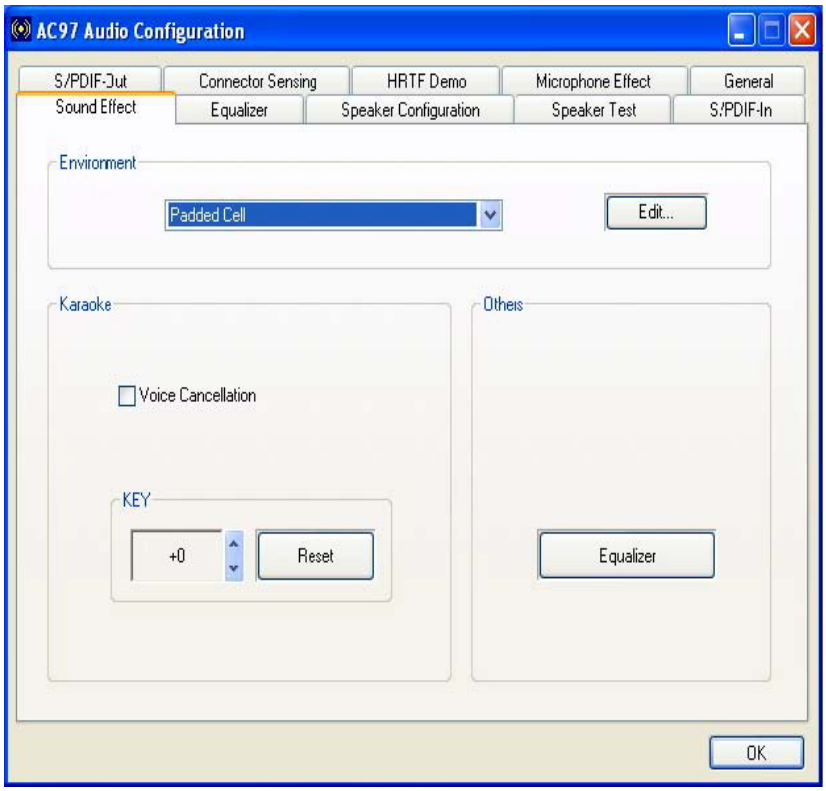


Figure 6-23: Sound Effects Manager (ALC655)

NOTE:

The Sound Effect Manager shown in **Figure 6-23** is for the RealTek ALC655 audio CODEC. Different CODECs may have different sound manager appearances.

The following section describes the different configuration options in the Sound Effect Manager.

D.2.2 Sound Effect Manager Configuration Options

The **Sound Effects Manager** enables configuration of the items listed below. To configure these items click the corresponding menu tab in the **Sound Effects Manager** in **Figure 6-23**.

NOTE:

The **Karaoke Mode** is configured in the **Sound Effect** menu. To access Karaoke configuration settings, click on the **Sound Effect** menu tab.

- Sound Effect
- Karaoke Mode
- Equalizer
- Speaker Configuration
- Speaker Test
- S/PDIF-In
- S/PDIF-Out
- Connector Sensing
- HRTF Demo
- Microphone Effect
- General

NOTE:

Not all RealTek **Sound Effect Managers** have all the above listed options. The Sound Effect Manager loaded onto the system may only have some of the options listed above.

Below is a brief description of the available configuration options in the **Sound Effects Manager**.

. **Sound Effect**:- Select a sound effect from the 23 listed options in the drop down menu. Selected sound effect properties can be edited. To edit
the sound effect click "**EDIT**."

. **Karaoke Mode**:- The **Karaoke Mode** is accessed in the Sound Effect
window. The **Voice Cancellation** disables the vocal part of the music being played. The **Key adjustment** up or down arrow icons enables users to define a key that fits a certain vocal range.

. **Equalizer Selection**:- Preset equalizer settings enable easy audio range settings. Ten frequency bands can be configured.

. **Speaker Configuration**:- Multi-channel speaker settings are configured in this menu. Configurable options include:

o Headphone
o Channel mode for stereo speaker output
o Channel mode for 4 speaker output
o Channel mode for 5.1 speaker output
o Synchronize the phonejack switch with speakers settings

. **Speaker Test:-**Each speaker connected to the system is tested individually to see if the 4-channel or 6-channel audio operates properly.

. **S/PDIF-In & S/PDIF-Out**:- These functions are currently not supported.

. **Connector Sensing**:- Realtek ALC655 detects if an audio device is
plugged into the wrong connector. If an incorrect device is plugged in a warning message appears.

. **HRTF Demo**:- Adjust HRTF (Head Related Transfer Functions) 3D positional audio here before running 3D applications.

. **Microphone Effect**:- Microphone noise suppression is enabled in this menu.

. **General**:- General information about the installed AC'97 audio configuration utility is listed here.

Chapter 6

6.1 Windows 2000/XP Driver Installation for Touch Screen

Before installing the Windows 2000/XP driver software, you must have the Windows 2000/XP system installed and running on your computer. You must also have the 9036 PenMount Serial Interface controller board installed. Contents of the PenMount Windows 2000/XP driver folder are listed below:

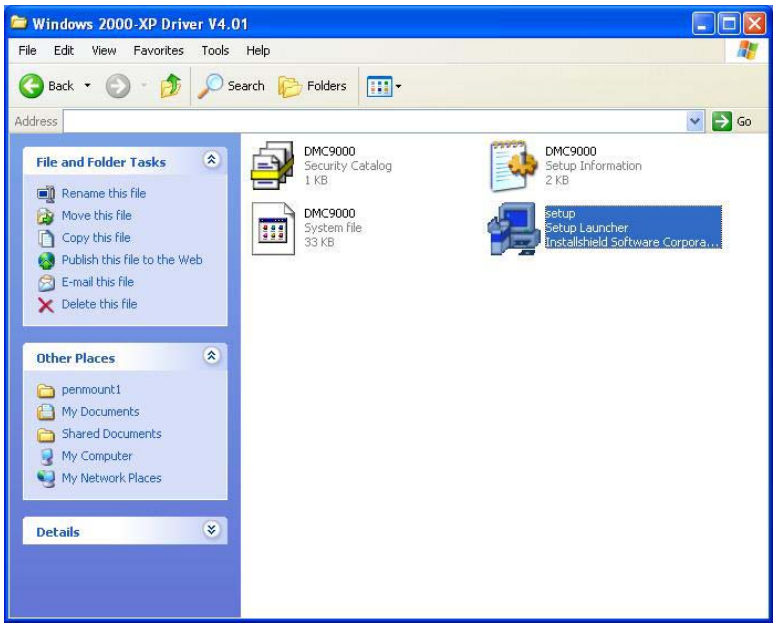
DMC9000.inf
DMC9000.sys
DMC9000.cat
SETUP.EXE

If you have an older version of the PenMount Windows 2000/XP driver installed in your system, please remove it first. Follow the steps below to install the PenMount Windows 2000/XP driver.

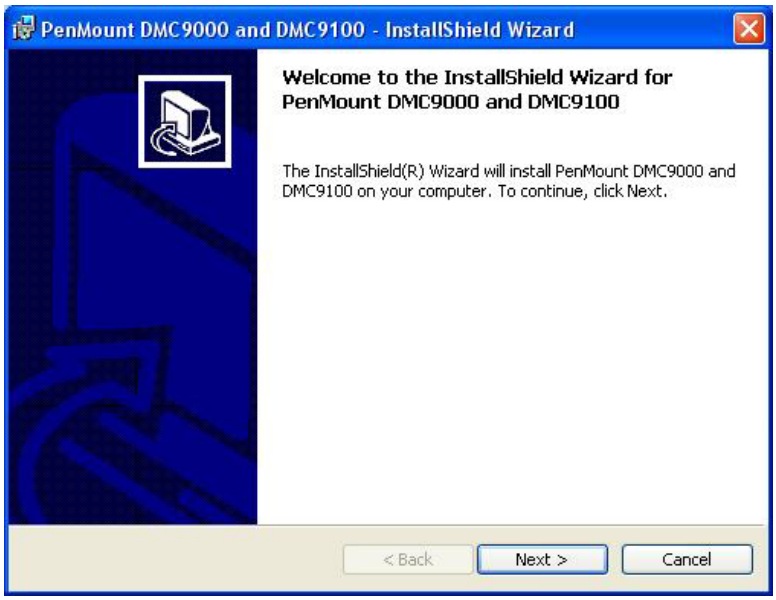
1. When the system first detects the controller board, a screen appears that shows “Unknown Device”. Do not use this hardware wizard. Press Cancel.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install software for:
Unknown
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

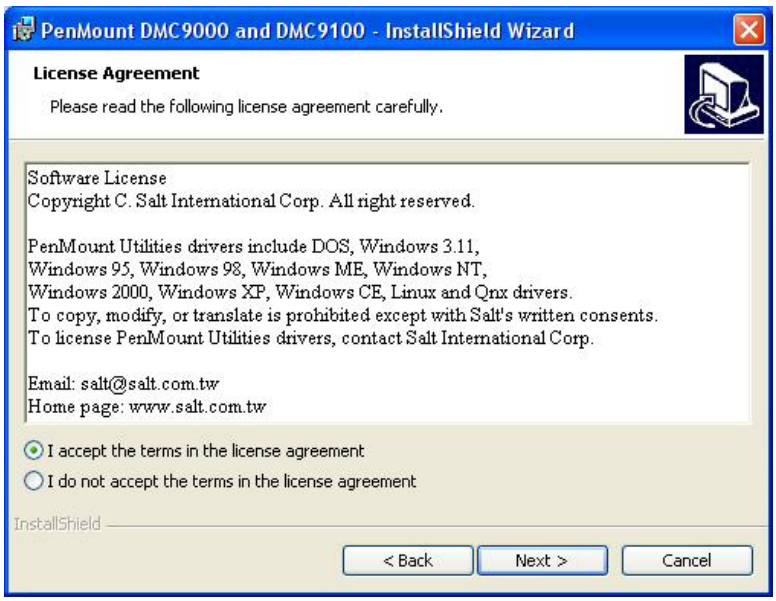
2. Insert the PenMount Driver CD-ROM. Go to the Windows 2000-XP Driver folder. Click **setup.exe**.



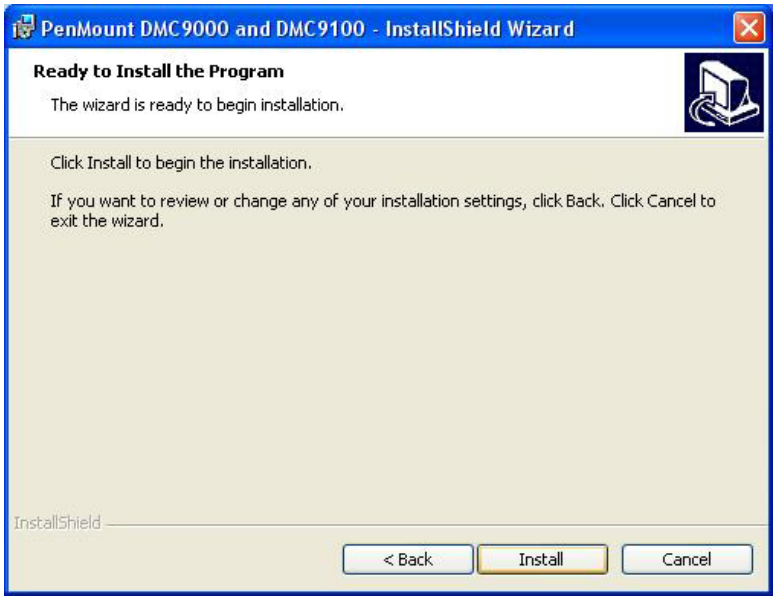
3. The screen displays the installation wizard for the PenMount software. Click “Next”.


PenMount DMC9000 and DMC9100 - InstallShield Wizard
Welcome to the InstallShield Wizard for PenMount DMC9000 and DMC9100
The InstallShield(R) Wizard will install PenMount DMC9000 and DMC9100 on your computer. To continue, click Next.
< Back
Next >
Cancel

3. A License Agreement appears. Click “I accept…” and “Next”.


PenMount DMC9000 and DMC9100 - InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
Software License
Copyright C. Salt International Corp. All right reserved.
PenMount Utilities drivers include DOS, Windows 3.11,
Windows 95, Windows 98, Windows ME, Windows NT,
Windows 2000, Windows XP, Windows CE, Linux and Qnx drivers.
To copy, modify, or translate is prohibited except with Salt's written consents.
To license PenMount Utilities drivers, contact Salt International Corp.
Email: salt@salt.com.tw
Home page: www.salt.com.tw
I accept the terms in the license agreement
I do not accept the terms in the license agreement
InstallShield
< Back
Next >
Cancel

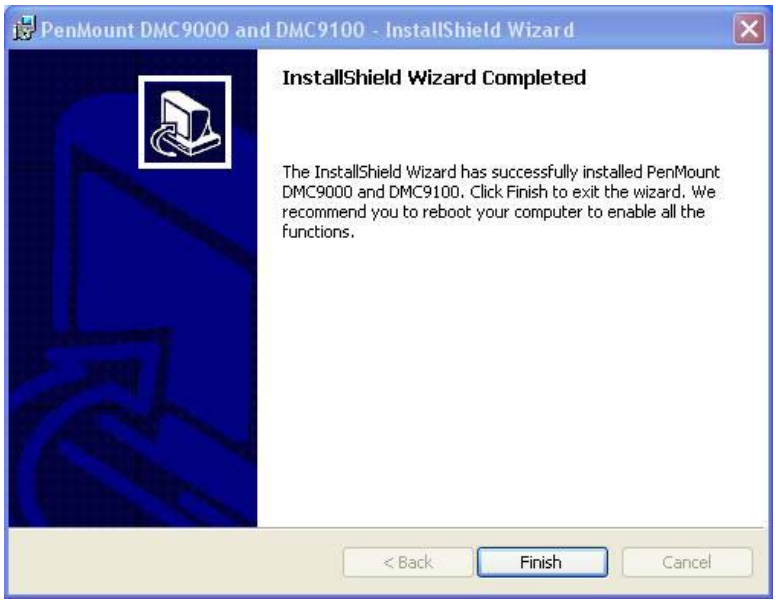
4. The “Ready to Install the Program” screen appears. Select “Install”.


PenMount DMC9000 and DMC9100 - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

5. The next screen is “Hardware Installation”. Select “Continue Anyway”.

Hardware Installation
The software you are installing for this hardware:
PenMount DMC9000 and DMC9100
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

6. The “InstallShield Wizard Completed” appears. Click “Finish”.


PenMount DMC9000 and DMC9100 - InstallShield Wizard
InstallShield Wizard Completed
The InstallShield Wizard has successfully installed PenMount DMC9000 and DMC9100. Click Finish to exit the wizard. We recommend you to reboot your computer to enable all the functions.
< Back
Finish
Cancel

6.2 Configuring the PenMount Windows 2000/XP Driver

Upon rebooting, the computer automatically finds the new 9036 controller board. The touch screen is connected but not calibrated. Follow the procedures below to carry out calibration.

1. After installation, click the PenMount Monitor icon “PM” in the menu bar.
2. When the PenMount Control Panel appears, click “Calibrate”.

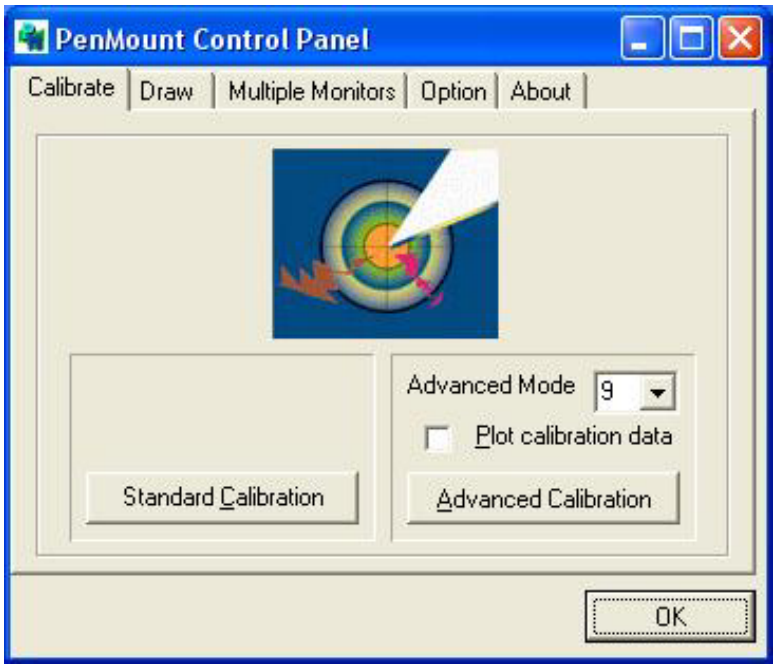
PenMount Control Panel

The functions of the PenMount Control Panel are **Calibrate**, **Draw**, **Multiple Monitors**, **Option**, and **About**, which are explained in the following sections.

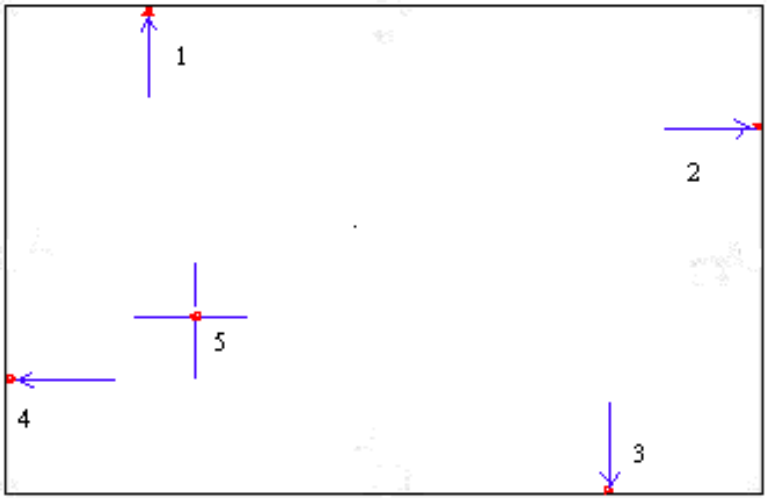
Calibrate

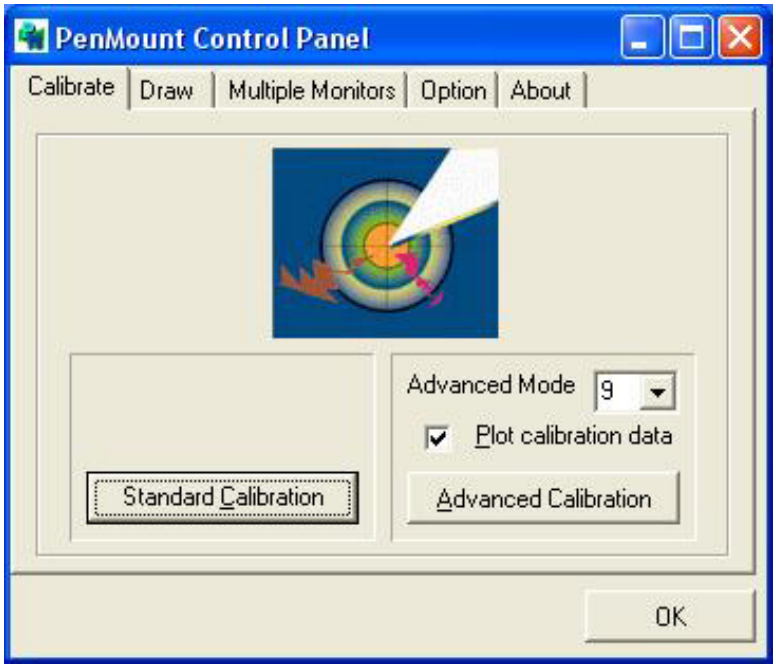
This function offers two ways to calibrate your touch screen. “Standard Calibration” adjusts most touch screens. “Advanced Calibration” adjusts aging touch screens.

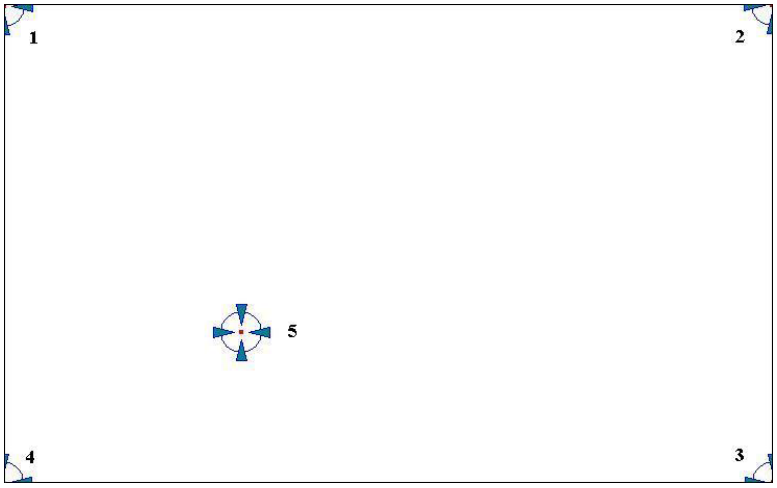
Standard Calibration	**Click this button and arrows appear pointing to red squares. Use your finger or stylus to touch the red squares in sequence. After the fifth red point calibration is complete. To skip, press ‘ESC’.**
Advanced Calibration	**Advanced Calibration uses 4, 9, 16 or 25 points to effectively calibrate touch panel linearity of aged touch screens. Click this button and touch the red squares in sequence with a stylus. To skip, press ‘ESC’.**



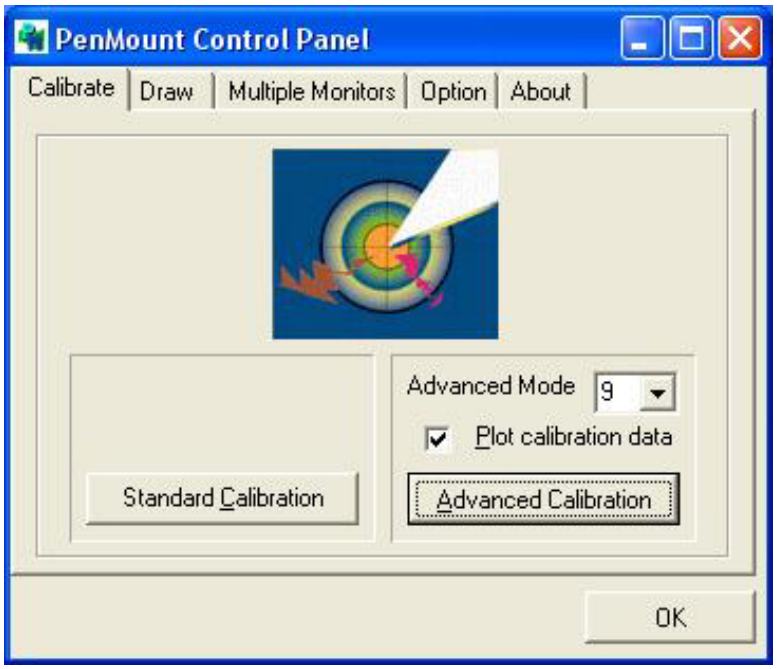
NOTE: The older the touch screen is, the more Advanced Mode calibration points you need for an accurate calibration. Use a stylus during Advanced Calibration for greater accuracy.





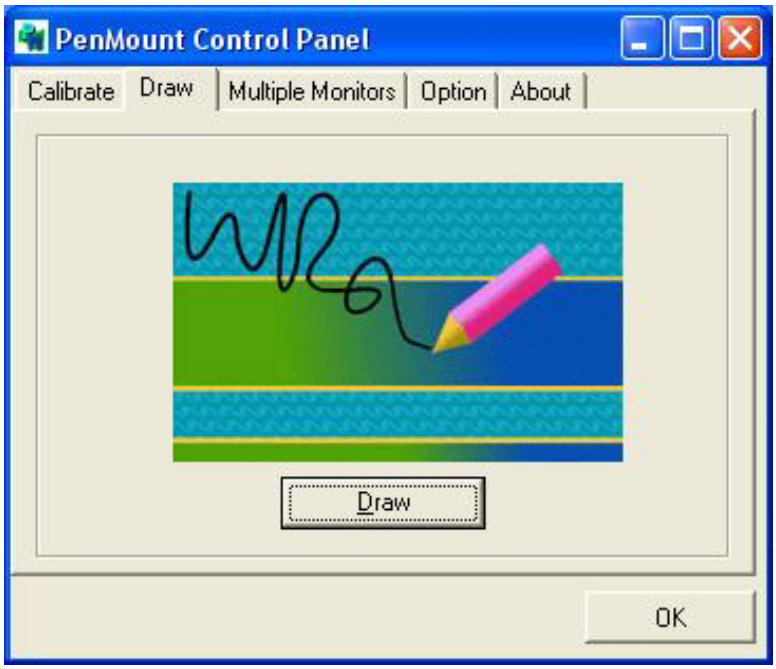


Plot Calibration Data **Check this function and a touch panel linearity comparison graph appears when you have finished Advanced Calibration. The blue lines show linearity before calibration and black lines show linearity after calibration.**

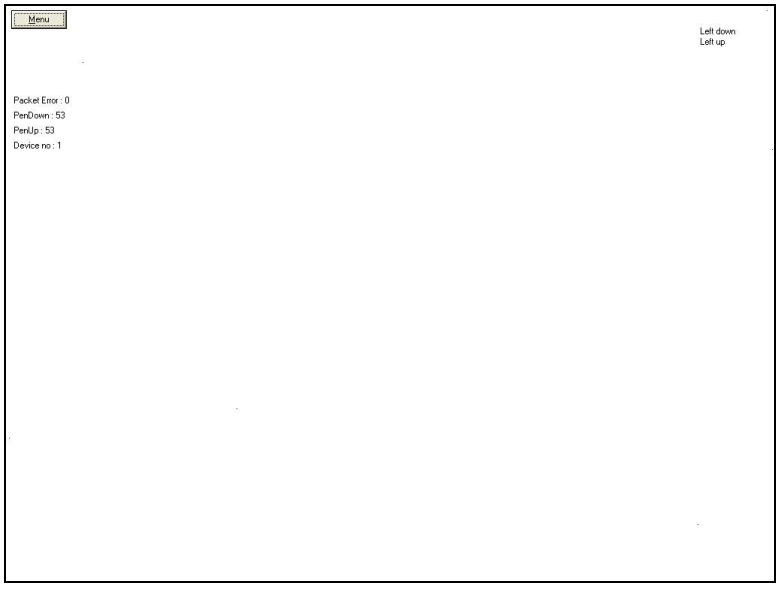


Draw

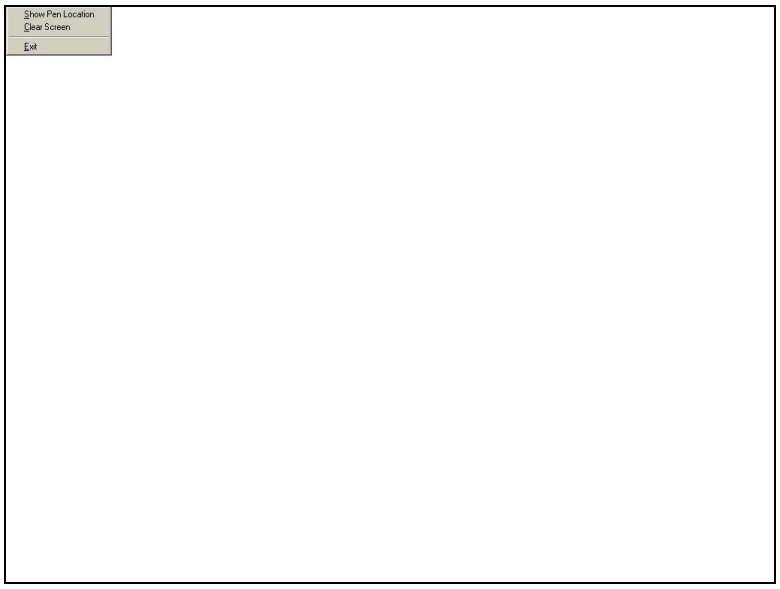
Tests or demonstrates the PenMount touch screen operation. The display shows touch location. Click **Draw** to start. Touch the screen with your finger or a stylus and the drawing screen will register touch activity such as **left**, **right**, **up**, **down**, **pen up**, and **pen down**.



Touch the screen with your finger or a stylus and the drawing screen will register touch activity such as **left**, **right**, **up**, **down**, **pen up**, and **pen down**.

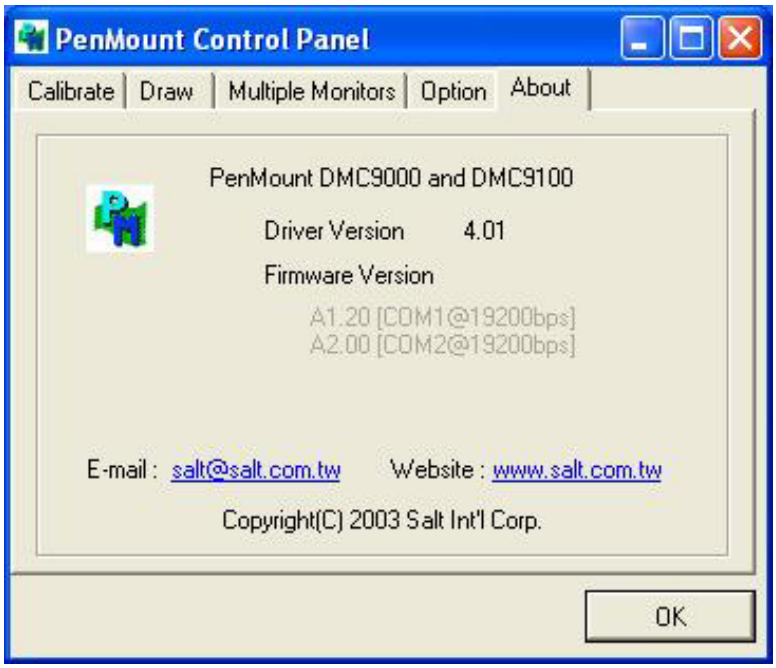


Click Clear Screen to clear the drawing.



About

This panel displays information about the PenMount controller and this driver version.



PenMount Monitor Menu Icon

The PenMount monitor icon (PM) appears in the menu bar of Windows 2000/XP system when you turn on the PenMount Monitor in the PenMount Utilities.

The PenMount Monitor has the following functions:

Beep	**Turns beep on or off.**
Right Button	**When you select this function, a mouse icon appears in the right-bottom of the screen. Click this icon to switch between Right and Left** **Button functions.**
Pen Stabilizer	**Check this function to reduce cursor vibration for relatively unstable touch screens, or where there may be excess vibration. Normally this function is not checked.**
Exit	**Exits the PenMount Monitor function.**

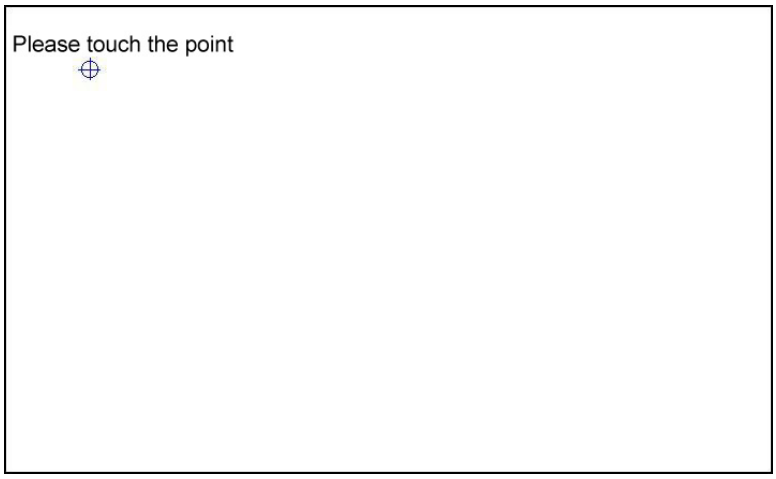
PenMount Rotation Functions

The PenMount driver for Windows 2000/XP supports several display rotating software packages. The PenMount drivers for Windows 95, Windows 98/ME, Windows 2000/XP, as well as Windows 98 USB and Windows Me/2000/XP support display rotating software packages such as:

- Portrait's Pivot Screen Rotation Software
- ATI Display Driver Rotating Function
- nVidia Display Driver Rotating Function
- SMI Display Driver Rotating Function
- Intel 845G/GE Display Driver Rotating Function

Configuring the Rotation Function

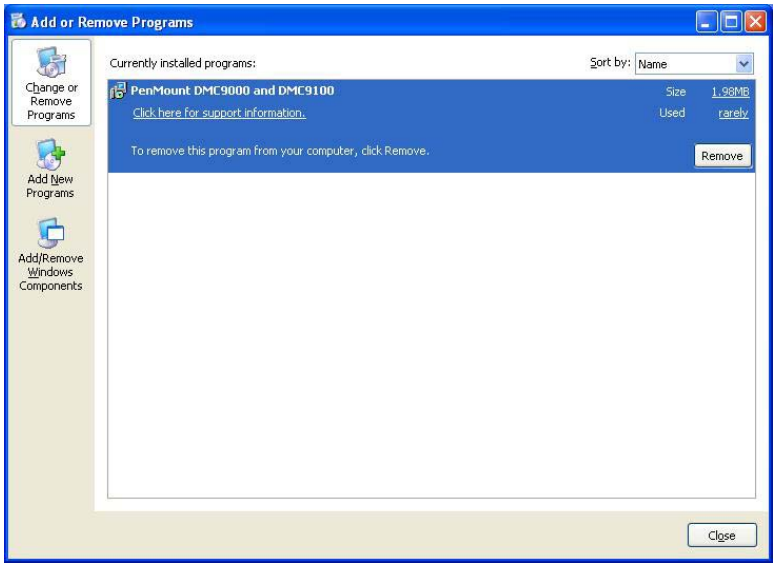
1. Install the rotation software package.
2. Choose the rotating function (0°, 90°, 180°, 270°) in the 3rd party software. The calibration screen appears automatically. Touch this point and rotation is mapped.



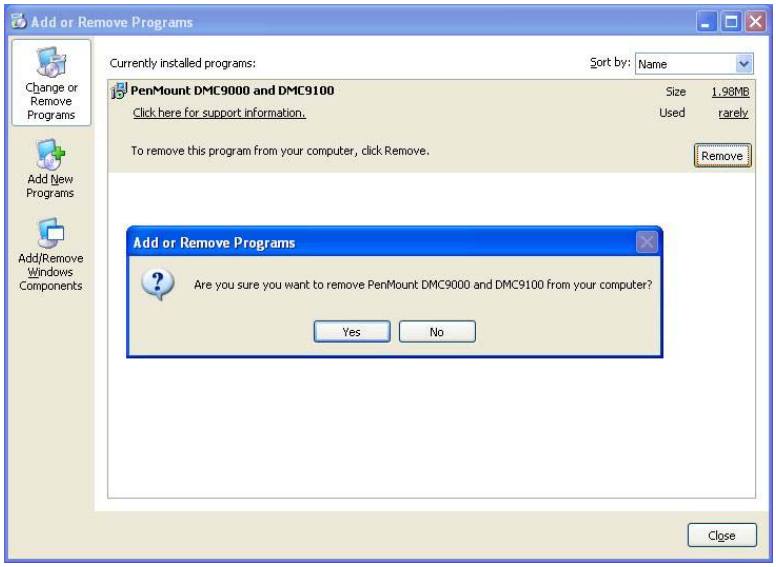
NOTE: The rotating function is disabled if you use Monitor Mapping

6.3 Uninstall the PenMount Windows 2000/XP Driver

1. Exit the PenMount monitor (PM) in the menu bar.
2. Go to **Settings**, then **Control Panel**, and then click **Add/Remove program**. Select **PenMount DMC9000** and click the **Add/Remove** button.



3. Select **PenMount DMC9000 and DMC9100**. Click the **Remove** button.



4. Select “Yes” and “Close” to remove the PenMount Windows 2000/XP driver, and reboot the system.

Appendix A: Watchdog Timer

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by software bug. When the CPU stops working correctly, hardware on the board will either perform a hardware reset (cold boot) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer:

- **INT 15H**:

AH – 6FH
Sub-function:
AL – 2 : Set the Watchdog Timer's period
BL : Time-out value(Its unit--second or minute, is dependent on the item "Watchdog Timer unit select" in CMOS setup).

You have to call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer will start counting down. While the timer value reaches zero, the system will reset. To ensure that this reset condition does not occur, the Watchdog Timer must be periodically refreshed by calling sub-function 2. However the Watchdog timer will be disabled if you set the time-out value to be zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

Notes: This function is applied by Winbond W83627HF chipset, if partners have further questions about it, please refer to the original datasheets or contact with our customer service department.

Note: When exiting a program it is necessary to disable the Watchdog Timer, otherwise the system will reset.

Example Program:

```
; INITIAL TIMER PERIOD COUNTER
;
W_LOOP:

        MOV     AX, 6F02H               ;setting the time-out value
```

```
        MOV     BL, 30                  ;time-out value is 48 seconds
        INT     15H
 ;
; ADD YOUR APPLICATION PROGRAM HERE
;
        CMP     EXIT_AP, 1              ;is your application over?
        JNE     W_LOOP                  ;No, restart your application

        MOV     AX, 6F02H               ;disable Watchdog Timer
        MOV     BL, 0                   ;
        INT     15H
;
; EXIT
```

Appendix B: Digital I/O

One characteristic of digital circuit is its fast response to high or low signal. This kind of response is highly needed for harsh and critical industrial operating environment. That's why we design 4-bit digital inputs and 4-bit digital outputs on the MOTHERBOARD.
Digital Input and Output, generally, are control signals. You can use these signals to control external devices that needs On/Off circuit or TTL devices. You can read or write data to the selected address to enable the function of digital IO.

Notes: This function is applied by Winbond W83627HF chipset, if partners have further questions about it, please refer to the original datasheets or contact with our customer service department.

W83627HF pin	DIO pin	W83627HF pin	DIO pin
GP10	IN0	GP14	OUT0
GP11	IN1	GP15	OUT1
GP12	IN2	GP16	OUT2
GP13	IN3	GP17	OUT3

A BIOS function call (INT 15H) is used to control Watchdog Timer:

INT 15H:

AH – 6FH
Sub-function: **AL – 8**: Set the Digital port is INPUT **AL** : Digital I/O input value

Example program:

```
MOV     AX, 6F08H           ;setting the Digital port is input
INT     15H                 ;
```

AL low byte = value

AH – 6FH
Sub-function: **AL – 9**: Set the Digital port is OUTPUT **BL** : Digital I/O output value

Example program:

```
MOV     AX, 6F09H          ;setting the Digital port is output
MOV     BL, 09H                        ;Digital value is 09H
INT      15H                ;
```

Digital Output is 1001b Appendix C: I/O Address Map

- **I/O ADDRESS MAP**

I/O ADDRESS MAP	DESCRIPTION
000-01F	DMA Controller #1
020-021	Interrupt Controller # 1, Master
040-05F	System Timer
060-06F	Standard 101/102 keyboard Controller
070-07F	Real time Clock, NMI Controller
080-0BF	DMA Page Register
0A0-0BF	Interrupt Controller # 2
0C0-0DF	DMA Controller # 2
0F0-0F0	Clear Math Coprocessor Busy
0F1-0F1	Reset Math Coprocessor
0F8-OFF	Math Coprocessor
170-1F7	BUS Master PCI IDE Controller
201	DIO
278-27F	Parallel Printer Port 2
2E8-2EF	Serial Port 4
2F8-2FF	Serial Port 2
376-376	BUS Master PCI IDE Controller
378-37F	Parallel Printer Port 1
3B0-3DF	Intel 82852GM/GME Graphic Controller
3E8-3EF	Serial Port 3
3F0-3F7	Floppy Disk Controller
3F8-3FF	Serial Port 1
480-48F	PCI BUS

- **1st MB Memory Address Map**

MEMORY ADDRESS	DESCRIPTION
00000-9FFFF	SYSTEM MEMORY
A0000-BFFFF	VGA BUFFER
C0000-CFFFF	VGA BIOS
E0000-FFFFF	SYSTEM BIOS

100000	EXTEND MEMORY

IRQ Mapping Chart

IRQ0	System Timer	IRQ8	RTC clock
IRQ1	Keyboard	IRQ9	AC97 AUDIO
IRQ2	IRQ Controller	IRQ11	COM4
IRQ3	COM2	IRQ10	COM3
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	PCI DEVICES	IRQ13	FPU
IRQ6	Available	IRQ14	Primary IDE
IRQ7	Printer	IRQ15	Secondary IDE

DMA Channel Assignment

CHANNEL	FUNCTION
0	Available
1	Available
2	Available
3	Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

Appendix C

VESA Mounting

The EX-93580 display monitor is mounted by means of VESA. Just carefully mount the arm onto the rear of the unit by fastening the given four screws as shown in Figure B.

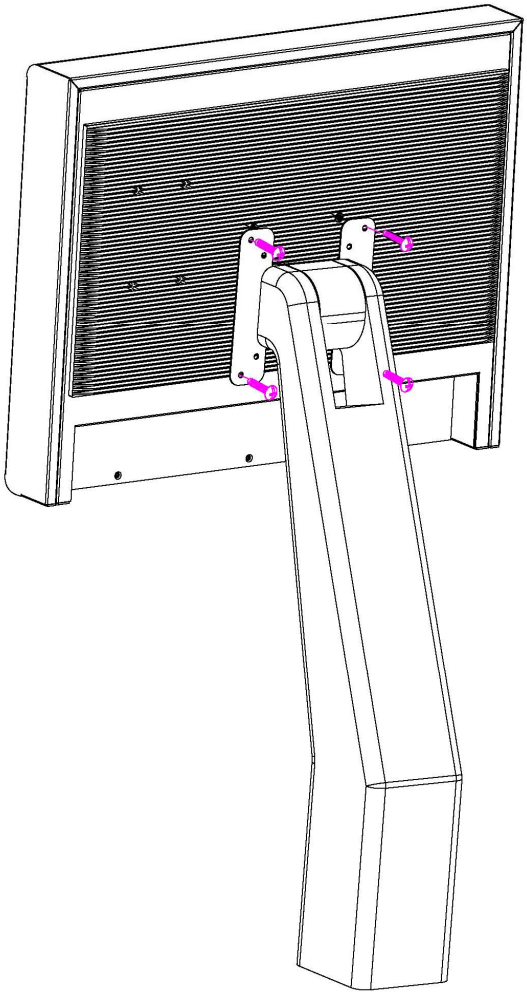


Figure A: VESA Mounting of the EX-93580